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(54) **Method and apparatus for removing noise data from a digitized image.**

(57) An apparatus and method for removing background noise and high frequency noise form an image by comparing each pixel in the image with neighboring pixels defining a variably shaped and sized kernel. The size and shape of the kernel are optimized for the particular characteristics of the data to be analyzed.

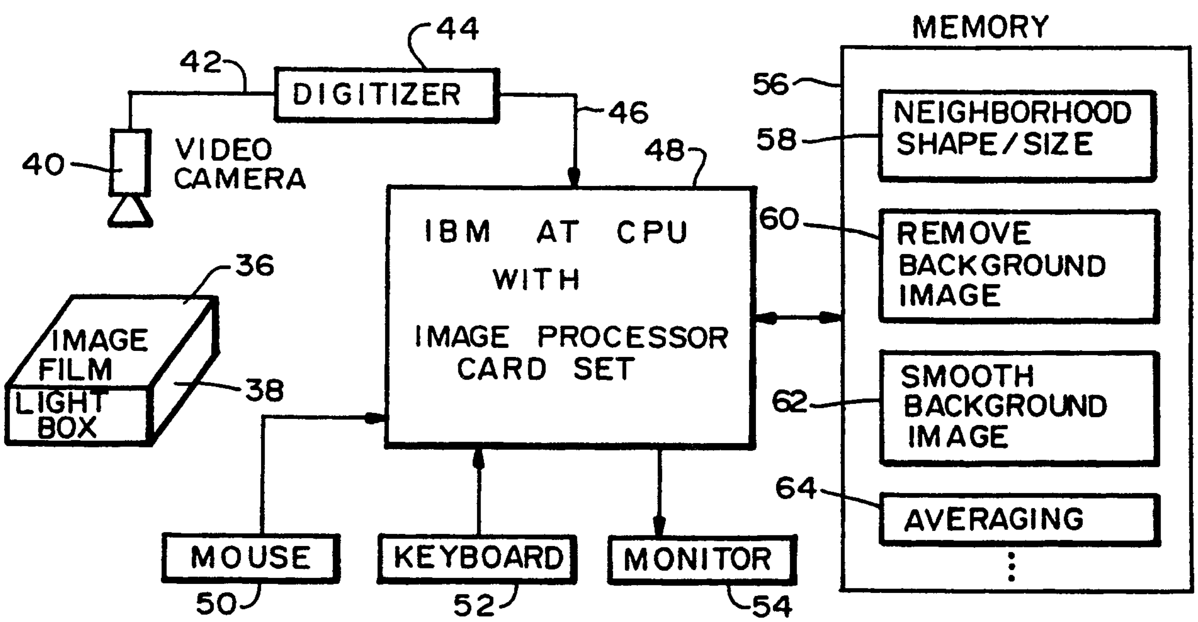

FIG. 3

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METHOD AND APPARATUS FOR GENERATING QUANTIFIABLE VIDEO DISPLAYS

Background of the Invention

The invention pertains generally to the field of image processing, and, more particularly, to the field of generating quantifiable images from digital images representing data spatially as pixel patterns of greater and lesser intensity.

The preferred embodiment of the invention is adapted for analysis of biological data generated in recombinant DNA research and other biological research. Such data includes 2D gels, DNA sequencing gels, gel blots, RFLP, DNA blots, microtiter color, microtiter fluorescence and other types of data presented spatially in an image. Typically, such images consist of a plurality of pixels with areas of pixels of varying intensity representing some amount of a particular DNA or protein with the intensity attributable to the protein being superimposed upon intensity representing background noise and high frequency noise caused by such things as pinholes in the film, penetration of the film by gamma rays etc.

Although the invention will be described in terms of its application to biological data, it will be appreciated that the teachings of the invention have utility in other fields of analysis of images.

A problem in analyzing such data in the past so as to be able to quantify the amount of a protein represented by a particular area of pixels in the image has been how to separate the intensity representing the data from the intensity caused by background noise. Although pixel intensity is the concept used herein to convey the teachings of the invention, pixel value is the general concept contemplated by the teachings of the invention. That is, the pixel values being analyzed may represent something other than light intensity. For example, each pixel in an image may represent the strength of radio transmissions from a small sector of the sky such that the invention could be used in radio astronomy applications.

In the past, such techniques as rolling ball filters have been used for background noise removal from images. Such a teaching is found in a conference paper by Rutherford et al. entitled "Object Identification and Measurement from Images with Access to the Database to Select Specific Subpopulations of Special Interest" published at the E-O Lase and E-O Imaging Conference sponsored by S.P.I.E., January 1987 with the proceedings published in May of 1987. There, the authors describe a method of background correction, i.e., noise removal, by use of a rolling ball filter which effectively takes the minimum pixel value in the ball filter region as the pixel value for the background image. The resultant image is then subtracted from the digitized image. A pipeline image array processor is used to perform this process. Such a technique however is not optimized for removal of background noise and high frequency noise in all situations because it does not take into account the varying geometric shapes of the data of interest in many varied application and because it does not take into account other application specific phenomenon such as vertical noise strips, dead spaces etc.

Accordingly, a need has arisen for apparatus and a method to optimize the noise removal process for data presented in many varied spatial formats.

Summary of the Invention

According to the teachings of the invention, there is disclosed herein a method and apparatus for background noise removal which uses a variable shape and a variable size kernel or neighborhood of adjacent pixels surrounding or next to the pixel being processed. The value of the pixel being processed is compared to all, or some selected subset, of the pixels in the neighborhood to find the minimum value. This minimum value is then substituted for the value of the pixel being processed. When all pixels have been so processed by comparing them to the values of the surrounding pixels in the corresponding neighborhood (each pixel has its own neighborhood), the resulting image is a "background image". A background image is an image where each pixel has the value of the smallest valued pixel in the neighborhood to which it was compared. Of course, those skilled in the art will appreciate that the background removal process can also be performed on a reverse video image by finding the maximum pixel value in each neighborhood and substituting that value for the value of the pixel of interest corresponding to that neighborhood.

The background image may then be further processed in some embodiments to remove high frequency noise. In one embodiment, high frequency noise is removed by processing the background image to generate a "maximum image", i.e., an image generated from the background image showing the maximum pixel values for each neighborhood in the background image. This maximum image is generated by using a smaller neighborhood than used in generating the background image and then using this smaller neighborhood to process the background image as follows. Each

pixel has its value compared to the values of the pixels in a corresponding neighborhood of surrounding pixels. The maximum value in each neighborhood is then substituted for the value of the corresponding pixel. When this has been done for all pixels, the maximum image is complete. This maximum image is substantially devoid of high frequency, large amplitude noise which dips below the surrounding neighborhood such as is characteristic of pinhole defects in film etc. This maximum image is subtracted from the starting image to generated a "background removed image".

In another embodiment according to the teachings of the invention, the maximum image is used as a starting image in an apparatus to perform a process to remove high frequency, low amplitude noise. In this process, a neighborhood is used which is smaller than the neighborhood used to generate the background image. Each pixel value for a pixel of interest is added to the pixel values for all the other pixels in the corresponding neighborhood. The sum is then divided by the number of pixels in the neighborhood to derive an average pixel value, and the value of the pixel of interest is set equal to this average value. After this is done for all pixels, the resultant image is subtracted from the original image used to generate the background image to arrive at a background removed image.

In another alternative embodiment, the average image may be generated directly from the background image and the resulting image subtracted from the original image to derive the background removed image.

In another alternative embodiment, the image generated by the averaging process may be generated directly from the background image, and the resulting image is used as the input image for the process of generating the "maximum" image. The resulting image is subtracted from the original image to derive the background removed image.

Brief Description of the Drawings

Figures 1(a) and 1(b) show, respectively, a typical autoradiograph of a 1-D gel separation and the same image with the data removed leaving only the background intensity showing.

Figure 2 a drawing showing how the data bearing image pixel value profile compared to the background pixel value profile.

Figure 3 is a block diagram of the hardware which can be used according to the teachings of the invention.

Figure 4 is a flow chart for the process for removing background noise from the image.

Figures 5 through 7 illustrate the process of background noise removal by comparison to neighborhood pixel values.

Figure 8 is a more detailed flow chart of the background noise removal process.

Figures 9 and 10 are alternative processes for selection of kernel size and shape.

Figures 11 and 12 illustrate how different kernel shapes are optimized for various data applications.

Figure 13 is a flow chart for the preferred embodiment of the process of background noise removal.

Figure 14 is a more detailed flow chart illustrating the process of generating a maximum image.

Figure 15 is a more detailed flowchart illustrating the process of high-frequency, low-amplitude noise removal by averaging.

Figure 16 is a flow chart for the process of generating a percent change image.

Figures 17(a) through 17(e) are the components of a quad display and the quad display itself.

Figure 18 is another type of quad display.

Figure 19 illustrates the concept of linked cursors for the quad display.

Figure 20 illustrates the process for alignment of images 1 and 2 which must be performed prior to the computation of values for the cursor locations in the quad display.

Detailed Description of the Preferred Embodiment

Referring to Figure 1(a), there is shown an image of a typical autoradiograph of a 1-D protein separation. Each of lanes 10 and 24 contains separated bands of radioactively labeled proteins from different samples. For example, lane 10 contains bands 12 and 14 with the difference in pitch of the crosshatching of band 14 indicating that this band is of greater brightness or intensity than the intensity of band 12. Likewise, bands 16, 18, 20 and 22 in Figure 1(a) all have varying degrees of brightness or intensity. A similar situation exists for lane 24, which is separated from lane 10 by a dead space 26. The varying intensity of each band is indicative of the amount of the particular protein or proteins represented by that band which was present on the gel at that particular position.

It is useful to be able to quantify an image such as shown in Figure 1(a) such that the intensity of the various bands can be measured as an indication of the amount of protein represented thereby. The difficulty with this approach, however, is that the various bands have their intensities superimposed upon background noise which, because of its varying intensity across a lane, causes errors. That is, the background noise can be thought of as forming an image of varying intensity which would

still be present even if there were no data represented in Figure 1(a). Figure 1(b) is a drawing showing this background image. The background image has a lane 10′ which corresponds to lane 10 in Figure 1(a) and a lane 24′ which corresponds to the lane 24 in Figure 1(a). The differences in pitch in the crosshatching of lanes 10′ and 24′ conveys in pictorial form the variation in the intensity or brightness of the background noise in the lane at various locations. For example, the area 28 in lane 10′ has a brighter background intensity than the area 30. By superimposing the image of Figure 1-(a) on the image of Figure 1(b), it can be seen that the relatively brighter intensity of band 14, which overlies an area of lesser intensity in the background image, as compared to a less-bright band 18, which overlies an area of brighter background intensity in Figure 1(b). For this reason, the relative intensities of the bands 14 and 18 cannot be used directly to quantify the amount of protein at those respective positions in the gel without creating errors caused by the varying intensity of the background image along lane 10′. Thus, according to the teachings of the invention, the background image of Figure 1(b) is derived by image processing of the image represented by Figure 1(a), and the resulting image is then subtracted from the image of Figure 1(a) to leave a quantifiable data image.

Referring to Figure 2, there are shown comparative intensity profiles through the image of Figure 1(a) to show the effect of background removal. The intensity trace labeled 32 represents the intensity of the original image which includes both intensity attributable to data as well as intensity attributable to background noise. The trace labeled 34 represent the intensity of the original image after background removal and, therefore, represents the intensity attributable to the quantity of a particular protein located at the corresponding location on the gel.

According to the teachings of the invention, a manually manipulated cursor having a variable size and a variable shape may be placed over any band of interest in the background-removed image to determine the intensity of that band attributable to the presence of a protein of interest. The process of determining the intensity caused by the data essentially involves the process of integrating the trace 34 to determine the area under any particular peak. Typically, the result of this integration will be reported at the touch of a key on a computer keyboard.

Referring to Figure 3, there is shown a block diagram of a computer apparatus according to the teachings of the invention. Image film 36, which contains a spatial depiction of the data to be analyzed, is placed on a light box 38. The light box shines light through the image film to create a pattern of light which has varying spatial intensity in accordance with the data and the background noise. Also, the image may be acquired by shining light on a nontranslucent film such as a polaroid shot. The resulting light pattern contains the data to be analyzed. This light pattern is converted by a video camera 40 into a video signal on line 42 representing an analog form of a raster-scanned version of the image on film 36. This analog signal is digitized in a data converter interface 44 and results in a stream of digital data on bus 46. This stream of digital data is read by a computer 48 and is stored in memory for further image-processing operations. The computer 48 is typically an IBM AT™ personal computer with an image processor card set plugged into the card slots. The image processor card set is an off-the-shelf, image-processing circuit manufactured by Matrox under the trademark MVP-AT™ Image-Processing Card Set. The computer 48 interfaces with the user through a mouse 50, a keyboard 52 and a monitor 54. An external memory 56 stores data and programs. Several software modules according to the teachings of the invention are shown as stored in memory 56. They are: a neighborhood shape/size interfacing module 58; a background removal module 60; a smoothing module 62; and an averaging module 64. The neighborhood shape/size interface module 58 serves to determine the shape and size of a neighborhood or kernel of pixels the values of which will be compared to the value of a pixel of interest in the kernel to determine the spatial intensity patterns of the background image. Typically, the shape of the neighborhood is determined by the computer for the particular application involved and relates to the typical shape of the data patterns to be analyzed. However, in alternative embodiments, the shape of the neighborhood may be set by the user in any of several different ways. For example, at start-up time, or upon switching applications, the computer can prompt the user through monitor 54 to determine what type of data is to be analyzed. After the user responds, either through the keyboard 52 or the mouse 50, the computer can put up either a textual, verbal or a pictorial menu of neighborhood shapes to be used. The user can then indicate which shape to use either by selecting it with mouse 50 or by typing in the code for the shape via keyboard 52 or by stating the shape. Alternatively, the user may sketch the neighborhood shape and/or size to be used through use of the mouse 50. In some embodiments, the shape of the neighborhood will be selected by the computer 48 based upon the user response regarding what type of data is to be analyzed. In some embodiments, a first neighborhood shape will be used to get rid of particular noise patterns having specific shapes followed by

the use of anther shape for the neighborhood which is keyed to the shape of the particular data or application for which the teachings of the invention will be used.

The size of the neighborhood to be used generally depends upon the typical size of the data spatial patterns to be analyzed. In the preferred embodiment, the size of the neighborhood is chosen which has a largest dimension which is two and one-half times the size of the largest data spatial pattern to be analyzed. In the preferred embodiment, the user may be prompted for the desired size for the neighborhood and may respond either in terms of a number or a code for the desired size. Alternatively, the selected shape for the kernel may be displayed on the screen, and the user may adjust the size of the kernel by having the kernel superimposed upon the image to be analyzed and using a "rubber band"-type cursor to adjust the size of the kernel. The details as to how the shape and size of the kernel to be used are selected by the user or by the computer are not critical to the invention.

The details of the remove background image module 60 will be described in greater detail below. The basic function of this module is to determine the level of background intensity throughout the image to be analyzed and to create a background image reflecting that background intensity at all points in the background image. This background image may then be subtracted from the original image in some embodiments to derive a background removed image.

The smooth background image module 62 removes high-frequency, high-amplitude noise (high-amplitude noise for purposes of this invention means noise which dips below the level the surrounding neighborhood) by finding the maximum pixel in each kernel of the background image and setting the value of the pixel of interest in this kernel to the maximum value found in the kernel. When this is done for all pixels and their corresponding kernels "maximum" background image has been completed. This serves to get rid of high frequency, large amplitude noise characterized by pixels of low intensity in the background image such as might be caused by pinholes in the film, gamma rays, etc.

Finally, the averaging module 64 gets rid of high frequency, small amplitude noise in either the background image or the smoothed background image generated by module 62. This is done by averaging all the pixels in a neighborhood and setting the pixel of interest in each neighborhood to the average value. Both modules 62 and 64 will be described in more detail below.

Referring to Figure 4, there is shown a flow chart for a basic embodiment of a process according to the teachings of the invention for background removal. The first step, symbolized by block 66, is to acquire the image to be analyzed. Specifically, the image to be analyzed is digitized into a plurality of pixels. These pixels define an image which contains data to be analyzed and displays this data in terms of varying spatial patterns of intensity, color, fill pattern or other means of displaying values for the pixels. How the value for each pixel is depicted is not critical to the invention. Typically, pixel values will be displayed in terms of their intensities. For some applications, the data to be analyzed is shown as dark spots on a lighter background such as autoradiography. In those applications, a "negative" or reverse video image is generated from the acquired image before further processing. In other applications, the data to be analyzed is shown as lighter spots on a dark background. In such applications, the acquired image is used as is without doing a reverse video image. In some embodiments, it is useful to average the original acquired image before further processing to remove the background. This averaging process is identical to the process described below with reference to Figure 15 carried out on the background removed image or the image generated by the process described with reference to Figure 14.

Next, the computer system interacts with the user to select a particular kernel size and/or shape for use in generating the background image, as symbolized by block 68. As noted earlier, the kernel shape is typically selected by the computer based upon the type of data to be analyzed in the preferred embodiment. That is, if the data takes the form of vertical rectangular blocks, as in the case of one-dimensional separations of DNA or proteins, then the preferred kernel shape is usually rectangular. However, if the data to be analyzed takes the form of circular spots such as in DNA library screens, cells tagged with fluorescing antibodies, or images of 96-well microtiter plates, then the preferred kernel shape is circular.

Generally speaking, the size of the kernel should be substantially larger than the size of the largest data area to be analyzed. That is, if the largest data spot to be analyzed is a circle of 2 mm diameter, then the preferred kernel shape and size is a circular area having a diameter sufficient to cause the total are within the kernel to be approximately 2.5 times the radius of the 2 mm diameter data spot. The reason for this size relationship is to insure that at least some background area outside the area of data of interest are included within the kernel. This is necessary to insure that a proper background image is generated. This is because the process of generating the background image involves comparing the value of each pixel in the image to be analyzed to the values of the sur-

rounding pixels to find a minimum value characteristic of the background. Thus, if no background pixels are included within a kernel which happens to be centered over a data spot, then the minimum intensity value which will be found in that kernel will not in fact be representative of background intensity at that location but will be representative of the intensity of the data as superimposed upon the intensity of the background.

As noted earlier herein, the kernel size may be selected by the user using any one of a number of different methods, none of which are critical to the teachings of the invention. Alternatively, the kernel size may be selected by the computer automatically, based on the type of data being analyzed. In the preferred embodiment, the kernel shape is selected by the computer automatically, based upon the data being analyzed, and the kernel size is selected by the user using a "rubber band" cursor to adjust the size of a default kernel which is superimposed over the image of data to be analyzed. The user then touches an edge of the kernel and "drags" it out to an appropriate dimension in some embodiments. In the case of rectangular kernels, the user may touch each of two opposing sides and drag each one individually out to the appropriate dimension so as to obtain the desired size and aspect ratio. This is done after dragging the kernel to a desired position on the image to be analyzed so as to surround the largest area of data shown on the image.

Block 70 represents the process of actually generating the background image using the kernel selected by the user. This process is best understood by reference to Figure 5, which shows a typical kernel or neighborhood 72 of rectangular shape surrounding a pixel of interest 74. Figure 6 shows the relationship of the kernel 72 to the overall image being processed. The pixel of interest 74 is any pixel within the area encompassed by the kernel 72. Although typically the pixel of interest is in the center of the kernel in the preferred embodiment, in alternative embodiments the pixel of interest 74 may be located anywhere within the boundaries of the kernel 72. The pixel of interest 74 is shown in the middle of a raster scan line 76 and is in the middle of a column of pixels 78. As is best seen in Figure 6, the pixel of interest 74 is a single pixel in a line of pixels which together comprise the single raster scan line 76 of the image to be analyzed 80. The image 80 is comprised of 512 raster scan lines like the raster scan line 76 in some embodiments, and there are typically 512 pixels on each raster scan line. The size of the raster is not critical to the invention. The kernel 72 includes several pixels from the raster scan line 76 within its boundaries and includes several other raster scan lines both above and below the raster scan line 76 although these other raster scan lines are not shown in Figure 6 to avoid unnecessary complexity.

Referring again to Figure 5, the process of generating the background image is accomplished by comparing the value of the pixel 74 to the values of each of the other pixels in the kernel 72 and finding the minimum value pixel and substituting its value for the current value of the pixel 74. For example, assume that the pixel 74 has a value of 5 on a scale from 1 to 10. Assume also that the pixels 82, 84 and 86 in the raster scan line 88 have values of 7, 4 and 1, respectively. When the value of the pixel 74 is compared to the value of the pixel 82, the value of the pixel 74 will be less, and no substitution is made. When the value of the pixel 74 is compared to the value of the pixel 84, it will be found that the value of the pixel 84 is less than that of pixel 74, and a substitution will be made such that the value of pixel 74 is rewritten to be a 4. When pixel 74 is compared to pixel 86, it will be found that pixel 86 has a still smaller value of 1, and this value of 1 will be written to pixel 74.

This process continues until all the other pixels in the kernel 72 have been examined. Each time a new minimum is found, that value is used to update the value of the pixel 74. When this comparison process is completed for every pixel in the kernel 72, the final value of the pixel 74 will be established for use as one pixel in the background image. This process of comparing each pixel in the image 80 of Figure 6 to all the pixels in a kernel comprised of a plurality of pixels adjacent to the pixel of interest is repeated for every pixel in the 512 by 512 pixel array of the image 80. When it has been completed, the complete background image has been generated.

The process symbolized by block 70 contemplates simultaneous processing for each pixel in the image 80 such that each pixel in the image is compared simultaneously with one other pixel in a kernel of pixels adjacent to the pixel of interest, and this process is repeated simultaneously for all pixels until all the pixels of interest have been compared to all the pixels and their respective kernels. This substantially increases the speed of processing to generate the background image. In some alternative embodiments, only a selected subset of the other pixels in each kernel will be sampled. In still other alternative embodiments, the process of comparing each pixel with the adjacent pixels in its kernel may be done serially such that each pixel of interest is compared simultaneously with all or some subset of all the pixels in the corresponding kernel such that the entire kernel is searched in a single machine cycle or however many machine cycles are necessary to make the comparison between one pixel and another. After

this process is accomplished, another pixel of interest from the image to be analyzed is selected and simultaneous comparison is made of this pixel with all or some subset of the pixels in the kernel corresponding to that pixel.

Note that as the pixel of interest moves along a raster line, a corresponding kernel surrounding that pixel of interest is selected to keep the pixel of interest in the same relative location within the boundaries of the kernel.

Note also that the background image generation process must be performed using a copy of the image such that the updating of the values of each pixel of interest occurs in the copy. This is necessary because each pixel of interest is a neighboring pixel for the kernel corresponding to some other pixel of interest. Therefore, if the value of the pixel of interest in the image to be analyzed is updated prior to having processed all the other pixels in the image, there will be distortions and errors caused in the processing of other pixels whose kernels overlap the pixel which had its value changed.

After the background image is generated, it is subtracted on a pixel-by-pixel basis from the image to be analyzed, as symbolized by block 90 in Figure 4. That is, the value of pixel 1 in raster scan line 1 of the background image is subtracted from the value of pixel 1 in raster scan line 1 of the image to be analyzed.

After this process is completed, the resultant image is displayed as a background-removed image on the monitor 54 in Figure 3, as symbolized by block 92 in Figure 4.

Referring to Figure 7, there is shown symbolically the process by which whole image processing occurs in the computer apparatus according to the teachings of the invention. Simultaneous comparisons of each pixel in the image to be analyzed 80 to a single one of the adjacent pixels in the corresponding kernel is accomplished by the use of offset and compare commands to the image processing board set in the IBM AT™. For example, assume that the image to be analyzed 80 is comprised of 9 pixels labeled A through I. Assume also that the heavy line 94 defines the boundaries of a kernel for a pixel of interest E. The phrase "pixel of interest" as the phrase is used herein means the pixel being processed which has its value compared to the other pixel values in the kernel or neighborhood and which has its value replaced if the test of the comparison is satisfied, i.e., in the case of generation of the background image, if the neighboring pixel selected from the other pixels in the kernel has a value which is less than the value of the pixel of interest.

To further the illustration, assume also that the heavy line 96 defines the boundaries for a kernel for the pixel I. Similarly, a kernel comprised of the pixels D, E, G and H can be defined for the pixel H, and a kernel comprised of the pixels B, C, E and F can be defined for the pixel F.

Now assume that the first comparison in the process of generating the background image is to compare the values of the pixels of interest in all these kernels, i.e., the pixels at the lower right-hand corner of each kernel, to the values of the pixels at the upper left-hand corner of each kernel. Thus, in the case of kernel 94, the value of pixel E, the pixel of interest, is compared to the value of the pixel A. If the value of A is less than the value of E, then the value of A will be substituted for the value of E in a copy of the image 80. This copy is shown to the right and is labeled the "offset" image. Simultaneously, the value of pixel I is compared to the value of the pixel E. If the value of E is less than the value of I, then the value of I will be overwritten with the value of E in the offset image.

The offset image 98 is originally a copy of the image to be analyzed 80. To facilitate simultaneous comparison of some or all of the pixels in image 80 to one of the pixels in their corresponding kernels, the offset image 98 is used as follows. Imagine the offset image 98 is a transparency which can be placed over the image 80 and shifted about so as to align any pixel with any other pixel. For the first comparison in the hypothetical example, the pixel E will be compared with the pixel A. To implement this, the memory map of digital data representing the "transparency", i.e., the offset image 98, is electronically placed over the memory map of digital data representing the original or "acquired" image 80 such that the offset image pixel A′ lies on top of the pixel E and the offset image pixel B′ lies on top of the pixel F in image 80. This aligns the offset image with the image 80 such that each pixel in the image 80 which has a pixel in the offset image 98 overlying it will be aligned with the pixel to which it is to be compared for the first round of comparisons. That is, the pixel E will be aligned with the pixel A′ and the pixel F will be aligned with the pixel B′. Likewise, the pixel H will be aligned with the pixel D′ and the pixel I will be aligned with the pixel E′. Examination of the kernels of image 80 indicates that for each of the overlapped pixels in image 80, i.e., the pixels of interest, the overlying pixel will be the pixel in the upper left-hand corner of the kernel in image 80 which corresponds to each pixel in image 80 which is overlapped. The offset for this first round of comparisons, then is "1 pixel up, 1 pixel left".

The value of each pixel in image 80 which is overlapped is then compared to the value of the pixel which overlaps it in image 98. If any of the pixel values in image 98 are less than the pixel values in pixel 80 which they overlie, the minimum

value is used to update the pixel in the offset image corresponding to the pixel in the image 80. The pixels in the offset image 98 which correspond to the pixels in the image 80 are those with the same "relative address". To aid in understanding the meaning of the phrase "relative address" one can think of the labels A, B, etc. for the pixels in image 80 as their relative addresses or labels in memory. Thus, if the value of the pixel A′ is less than the value of the pixel E, then the value of the pixel A′ is written into the memory location storing the value of the pixel E′. The same process occurs for all other overlapped pixels.

Pixels in image 80 which are not overlapped, such as the pixels A, B, C, D and G, are compared to "dummy" pixels (constants or locations in the memory map which are loaded with constants) in the offset image 98 which have had their values artificially set to the maximum intensity level. This has the effect of causing the non-overlapped pixels in image 80 to never have their corresponding pixels in image 98 replaced with a minimum. The dummy pixels are labeled with Xs in image 98.

Thus, after one round of comparisons, each pixel in the image 80 will have been compared to one of the pixels in the corresponding kernel or a dummy pixel. To complete the process of generating the background image, a new offset or shift is performed to align the offset image with the image 80 such that the next pixel to be examined in each kernel overlies the pixel of interest in each kernel. Thus, for example, if the pixel E is to be compared next with the pixel D, then the offset image 98 is shifted such that the pixel D′ overlaps the pixel E, and the pixel E′ overlaps the pixel F. Then a new round of comparisons is made simultaneously to compare all overlapped pixels with the values of their overlapping pixels with appropriate updating where new minimums are found.

This offset/compare/update process occurs as many times as there are pixels in each kernel to be compared with the pixel of interest in each kernel. It is not necessary that all neighboring pixels in every kernel be compared with the pixel of interest to generate the background image. In fact, in some embodiments, only a sampling of the other pixels in each kernel is used to generate the background image.

The above-described process is graphically illustrated in the flow chart of Figure 8. The process illustrated in Figure 8 corresponds to the process symbolized by block 70 in Figure 4. No further discussion of Figure 8 is deemed necessary since it is self explanatory in light of the discussion above. Of course, those skilled in the art will appreciate that the background removal process can also be performed on a reverse video image by finding the maximum pixel value in each neighborhood and substituting that value for the value of the pixel of interest corresponding to that neighborhood. This technique is deemed sufficiently self-explanatory as to not warrant further discussion.

Referring to Figure 9, there is shown a flow chart for the preferred embodiment of the process symbolized by block 68 in Figure 4. Basically, the process represented by the flow chart of Figure 9 represents an embodiment where the computer prompts the user to indicate what type of data is being analyzed and then selects the appropriate kernel shape based upon the user response. The user is then prompted to select an appropriate size for the kernel given the shape selected by the computer.

Referring to Figure 10, there is shown an alternative embodiment of the process symbolized by block 68 in Figure 4. The difference between the embodiment shown in Figure 9 and Figure 10 is that in the embodiment of Figure 9, the computer selects the kernel shape based upon the user-supplied data regarding the type of application data that is to be analyzed. In Figure 9, the user then selects the kernel size. In the embodiment of Figure 10, once the user supplies data regarding what type of application the machine is to be used on, the user is then prompted to select the kernel shape as well as to select the kernel size. In yet another alternative embodiment, the computer may select both the shape and the size based on the application data supplied by the user.

Figure 11 shows an example of two different kernel shapes for use on band type data such as is found in one-dimensional gel protein separations. The kernel shape indicated by the dashed line labeled 100 is not a good shape to use in this situation since it overlaps a portion of the dead space 102 which lies between band 104 and band 106. Since there is no valid background noise in the dead space 102, the kernel shape 100 will distort the background image, thereby creating errors. The kernel shape 108 is a better shape to use for this situation since it includes areas of the band 104 outside the data band of interest 110 but does not include any pixels in the dead space 102.

Figure 12 illustrates a situation where differing kernel shapes are useful. The more or less circular data spots in Figure 12 would be best quantized by the use of a circular kernel such as that shown in dashed lines at 112. However, certain types of data include vertical strips of noise in the image such as is shown at 114. In these situations, it is useful to do a two-stage background image generation process. The first stage of this process is to use a slender vertical kernel which is thinner than the thinnest noise streaks in the image. Such a kernel is shown at 116 in dashed lines. This kernel shape can effectively remove noise strips such as shown

at 114. After a background image is generated using the kernel shape of 116, the second stage of the background image generation process is entered where the kernel shape changes to that shown at 112. Background image generation then proceeds operating upon the image generated using the kernel 112 on the acquired image.

Referring to Figure 13, there is shown a flowchart for the preferred embodiment of a process according to the teachings of the invention. The first three stages in the process are symbolized by blocks 66, 68 and 70. These three stages are identical with the first three stages in the process symbolized by the block diagram of Figure 4. Likewise, the last two stages, symbolized by blocks 90 and 92 are identical to the process stages symbolized by blocks 90 and 92 in Figure 4. The difference between the process symbolized by Figure 4 and the process symbolized by Figure 13 lies in processed stages symbolized by blocks 120 and 122.

The process represented by block 120 is a series of steps to remove high frequency, large amplitude noise from the background image generated by the process repre sented by block 70. Such high frequency, large amplitude noise typically results from pinholes in the film, the penetration of gamma rays through the film or other such phenomena which cause large spikes in the intensity values of pixels. The details of this process will be given with reference to Figure 14.

Referring to Figure 14, there is shown a flowchart symbolizing the process steps implemented by block 120 in Figure 13. The process represented by Figure 14 essentially generates a maximum image from the background image generated by block 70 in Figure 13. This is done using a smaller kernel than was used to generate the background image and by searching throughout the kernel to find the maximum pixel value and using that value to update the value of the pixel of interest within that kernel. This process is repeated for all or some subset of all of the pixels in the image to generate a maximum image.

The first step in generating a maximum image is symbolized by block 124 representing the process of making a copy of the background image generated in the process represented by block 70 in Figure 13.

Next, a kernel is selected as symbolized by block 126. This kernel should be smaller than the kernel used to generate the background image and, generally, is very small in that it has an area which corresponds to the area of pinhole type defects.

Next, in block 128 the copy image is offset to align any selected pixel in each kernel with the corresponding pixel of interest in the background image. This process is identical to the process described with reference to FIGS. 6, 7 and 8 except that a much smaller kernel is used.

Block 130 represents the process of comparing each pair of aligned pixels to determine which one has the maximum value. This process is also identical to the process used in generating the background image, but the neighboring pixel in the kernel is checked to determine if its value is greater than the value of the pixel of interest rather than less than as in the case of generating the background image.

Block 132 represents the process of updating the pixel in the copy image corresponding to the pixel of interest in the background image for each aligned pixel pair where the aligned pixel in the copy image has a value which is greater than the aligned pixel of interest in the background image. This process also corresponds to the background image generation process described with reference to FIGS. 6, 7 and 8 and need not be further described here.

Next, in block 134, the copy image is offset to a different location to align another pixel in each kernel with the pixel of interest in the corresponding kernel in the background image.

Then the test of block 136 is performed to determine if all the other pixels in the kernel selected for generation of the maximum image from the background image have been checked against the pixel of interest in each kernel. If all the neighboring pixels each kernel have been checked, the test of block 136 causes branching to block 138 where exit to the next step in the process is performed based upon completion of the maximum image. The next step in the process would be block 122 in Figure 13 in the preferred embodiment. However, in alternative embodiments, the next step in the process would be block 90 in Figure 13 or some other image processing step. If the test of block 136 indicates that not all the pixels in the kernel have been checked for a value which exceeds the value of the pixel of interest, then a branch to block 130 is performed where each pair of aligned pixels in all the kernels are checked as previously described. Steps 130, 132, 134 and 136 are performed as many times as there are neighboring pixels to the pixel of interest in each kernel. These steps 130, 132 and 134 along with step 136 result in the simultaneous processing of the entire image.

Referring to Figure 15, there is shown a flowchart of the process represented by block 122 in Figure 13. This process smooths the background image by averaging all of the pixels in a kernel thereby removing high frequency, low amplitude noise. The process of Figure 15 can be carried out using the background image generated by the pro-

cess of block 70 as the starting image in some embodiments or upon the image generated by the process represented by block 120 in Figure 13 as the starting image. That is, alternative embodiments to the process symbolized by the flowchart at Figure 13 are to perform either the process represented by block 120 alone or the process represented by block 122 alone or both between the processes represented by blocks 70 and 90. Accordingly, the first stage in the process represented by Figure 15 is symbolized by block 140 and making a copy of the starting image where the starting image may be the image generated by the process represented by block 70 in Figure 13 or the image generated by the process represented by block 120.

Next, in block 142 a kernel is selected. In some embodiments, the computer may automatically select this kernel, and in other embodiments, the user may select a kernel. In either embodiment, the size and/or shape may be variable. The size of the kernel is generally substantially smaller than the kernel used to generate the background image as selected in block 68 of Figure 13.

Block 144 represents the process of offsetting the copy image from the starting image to align one of the pixels in each kernel having the shape and size selected in block 142 with the corresponding pixel of interest in each kernel. This process is similar to the process represented by block 128 in Figure 14 and the process discussed with reference to FIGS. 5-8.

Next, in block 146 the pair of aligned pixels are summed with the sum being used to update the pixels in the copy image which are aligned with pixels in the starting image. In some embodiments, pixels which have no overlying pixel in the copy image are summed with a constant.

In block 148 a process is carried out to offset the summed image generated by the process of block 146 to align another pixel from each kernel with the corresponding pixel of interest in each kernel.

The test of block 150 is to determine if all other pixels in each kernel have been aligned with and summed with the pixel of interest in each kernel with the total being used to update the value of the pixel and the summed image which corresponds to the pixel of interest in each kernel. In other words, steps 144, 146 and 148 are performed a number of times equal to the number of pixels in a kernel less one. This means that every other pixel in the kernel is aligned with the pixel of interest and summed therewith. If the test of block 150 determines that not all pixels in each kernel have been summed with the pixel of interest, branching back to the process represented by block 146 occurs. If all other pixels in a kernel have been summed, the process of block 152 is performed. In this process, each pixel in the summed image has its value divided by the number of pixels in each kernel. This generates a value for each pixel in the summed image which is the average value for all pixels and the kernel. This average value is then used to update the value of the pixel in the summed image.

The resultant image is used by block 90 in Figure 13 as the background image which is subtracted from the acquired image to leave a background removed image which is displayed by the process of block 92 in Figure 13.

Block 154 represents the process of repeating the smoothing or averaging process if desired or necessary. If not desired or not necessary, exit to block 90 in Figure 13 is performed.

Referring to Figure 16, there is shown a flow chart for a process of generating a percent change image useful in comparing two data images. Preferably, this process is carried out on a background removed image, but it may also be carried out between any two images. The process starts as symbolized in block 170 by subtracting the value of a pixel in image 1 from the value of a corresponding pixel in image 2. Typically, this process would be carried by subtracting pixel 1 of line 1 of image 1 from pixel 1 of line 1 of image 2 and storing the difference. However, the order in which the pixel are process is immaterial as long as corresponding pixels, i.e., pixels having the same relative location in the image are subtracted. An additional feature in some embodiments including the preferred embodiment is to clip the noise from the percent change image by implementing a rule limiting the allowable differences. The rule is, if the sum of the values of the two pixels being compared is less than a noise clipping constant (fixed for any application but modifiable by the user), then the difference is set to 0. This rule has the effect of eliminating salt and pepper noise from the percent change image which can result when the differences between the images at substantially all the pixels is small.

Next, in step 172, the difference value is multiplied by a constant. This constant may, in some embodiments be fixed for all comparisons, but, in the preferred embodiment, the constant is selected by the computer based upon the application, but the user can override the selection and supply a new constant.

Step 174 represents the process of dividing the difference between the two pixel values by the minimum of the pixel values compared. This step generates a percentage change number indicating how much the intensity or value of the one of the pixels varies from the value of the other pixel. These percentage numbers vary from 255% to 1%

because the maximum pixel intensity value is 255 and the minimum pixel intensity value is 1.

The significance of the constant is that it controls what percentages changes can be seen in the final percent change image and the intensities at which the percent change pixels are displayed. That is, the constant controls the range of percentage differences which can be seen by stepping up the percentage change numbers to larger numbers. However, the maximum intensity value which can be displayed is 255. Therefore, selection of larger constants can lead to clipping since the resulting percentage change numbers after multiplication can exceed 255. In the preferred embodiment, the constant ranges from +1 to +256, but in other embodiments, any number between 0 and any positive number could be used including fractional numbers.

In step 176, the result from step 174 is added to another constant to set the 0% change number equal to some reference intensity value. In the preferred embodiment, intensity values range from 1 to 255, and the constant used in step 176 is 127 such that the 0% change falls in the middle of the gray scale.

In step 178, the results from step 176 are clipped between 0 and 255 for purposes of using the results on a video display. The result is stored in a percent change image file or framestore.

Step 180 represents the process of repeating steps 170 through 178 for all pixels in both images to complete generation of the percent change image. The image may then be displayed for inspection and analysis.

Referring to Figures 17(a) through 17(b), there are shown a plurality of images which together comprise the components of a quad display and the quad display itself. The purpose of a quad display is to facilitate visual comparisons and analysis of data bearing images. The components of a quad display are the two compared images used to generate the percent change image. the percent change image itself, and a fourth image which is called the difference image. This difference image is at each pixel the difference between the two corresponding pixels in images 1 and 2, divided by 2 and added to 127. The percent change image is the image generated by the process of Figure 16. The term "corresponding pixels" for the description of the difference image means the same thing as that term as used for the percent change image.

If the display hardware is large enough to display four complete images of the size of image 1, then all four images are simultaneously displayed as arranged in Figure 17(e). If however, the display apparatus can display only one image having the number of pixels in image 1, then several alternative embodiments are possible. First, each image may be sampled to develop of subset of pixel for that image. Such sampling can include selecting every other pixel on every other line such that one-fourth of the total number of pixels remain to be displayed. In another alternative embodiment, a selection of one-quarter of each image is made, and that quarter of an image is displayed in the corresponding portion of the quad display of Figure 17(e). The quarter of each image selected can be selected by the user or by the computer based upon the application or can be set to a default selection by the computer and modifiable by the user. The possibilities for which one-quarter to select are numerous and include one quadrant of each image, a horizontal strip amounting to one-fourth of the pixels or a vertical strip amounting to one-fourth of the pixels.

In the preferred embodiment, selects which quarter of each image to be displayed by manipulation of a "linked" cursor in a scout image. The scout image is, in the referred embodiment, a 2 to 1 minification or subset of image 2. This minification is performed by selecting every other pixel of every other line and displaying the result as the scout image in the lower left quadrant of the display. The locked cursor is a fixed cursor encompassing one-fourth of the total area of the scout image. The user manipulates the position of this cursor by manipulation of a mouse, track ball or light pen etc. Also, the position of the cursor can be positioned by default in one of the four quadrants of the scout image and this position can then be modified by the user. As the user moves the cursor in the scout image, a corresponding cursor in each of the other four images moves synchronously to encompass the pixels corresponding to the pixels encompassed by the cursor in the scout image. When the user, selects a position for the cursor in the scout image as the final position, the corresponding pixels in the other three images are selected and displayed in the corresponding quadrants of the quad display shown in Figure 17(e). Simultaneously, all the pixels in the difference image corresponding to the selected pixels in images 1, 2 and the percent change image are selected and displayed in the lower left quadrant of the quad display.

In other embodiments, the quad display may be arranged differently. An example of such an alternative arrangement is as shown in Figure 18. Any combination of hardware and software to implement this process and cursor manipulation will suffice for purposes of practicing the invention. The preferred embodiment of computer code which when combined with the hardware illustrated in Figure 3 will implement the teachings of the invention is given in Appendix A.

Referring again to Figure 17(e) there is shown

the positions for four measurement cursor locations covering four sets of corresponding pixels. These cursor locations are shown at 182, 184, 186 and 188 in exemplary rectangular shape. The shape and size of the cursors can be selected by default by the computer and be modifiable by the user or can be selected outright by the user.

After the position, shape and size of the cursor is established, the computer calculates some quantity related to the values of the pixels inside the cursor. Examples of what these quantities can be are: 1) absorption meaning the sum of all the pixel values within the cursor in preselected units, which can be optical density, counts per minute, etc. for images 1 and 2 only; 2) the average value of all pixels in each cursor location for images 1 and 2; 3) square millimeters of optical density meaning absorption in optical density units divided by the number of pixels per square millimeter. Once these values are calculated for images 1 and 2, the values for the corresponding sets of pixels in the cursor locations in the percent change and difference images are automatically determined. That is, for the percent change image, the value returned for the cursor location is calculated according to the algorithm specified in Figure 16 as modified by omission of multiplication by the constant and addition of the second constant. That is, the number returned for the cursor location in the percent change image is the value determined for the cursor in image 1 minus the value for the cursor in image 2 divided by the minimum value between these two numbers.

Likewise, the value returned for the cursor in the difference image is the value of the difference between the values returned for the cursor locations in images 1 and 2 divided by 2.

Figure 19 clarifies how the cursor manipulated by the user in the 2 to 1 minified scout image (subset of image 2) corresponds to one-quarter of the pixels in the full size image 2 at the same relative location in the image.

Referring to Figure 20, there is shown a diagram illustrating the process of alignment of images 1 and 2 which is necessary for the computation of values for the pixels in the cursors in the quad display. Figure 20(a) represents the camera input video data that defines image 2. Figure 20(b) illustrates an already acquired image 1 stored in a frame buffer. The corresponding pixels from these two images are combined according to the algorithm specified in Figure 20(d) to generate the image of Figure 20(c) on the display. The user then manipulates image 2 under the camera until the displayed image calculated per the equation of Figure 20(d) shows minimal difference between image 1 and image 2. When this condition exists, the user so indicates, and the pixels of the image of Figure 20(a) are captured in a frame buffer as the final image 2 for use in the processing described above to return the values for the selected cursor locations in the quad display shown in Figure 17.

Although the invention has been described in terms of the preferred and alternative embodiments disclosed herein, those skilled in the art will appreciate numerous modifications which can be made without departing from the spirit and scope of the invention. All such modifications are intended to be included within the scope of the claims appended hereto.

Claims

1. An apparatus for removing background noise from an image, comprising:
means for digitizing an image into a plurality of pixels defining a first image, each pixel having a value, and for making and storing a copy of said first image as a copy image;
means for generating a background image from said copy image by simultaneous processing on each said pixel, said simultaneous processing comprising, for each selected pixel in said copy image, comparing the value of said selected pixel with the value of another pixel in a group of pixels adjacent to said selected pixels and replacing the value at said selected pixel with the value of said other pixel if said other pixel's value is less than the value of said selected pixel, and repeating said comparison and replacement process for at least selected ones of said other pixels in said group; and
means for subtracting said background image from said first image to generate a background-removed image.

2. The apparatus of claim 1 further comprising means for displaying said background-removed image.

3. The apparatus of claim 1 wherein said means for generating includes means for selecting said other pixels in said group so that said other pixels define a predetermined shape.

4. The apparatus of claim 3 wherein said means for selecting includes means for selecting said other pixels so as to define a group with a predetermined shape.

5. The apparatus of claim 1 wherein said means for digitizing creates a digital image that displays data in spatial patterns having predetermined size and shape characteristics, and wherein said means for generating includes means for selecting said other pixels in said group includes means to select said other pixels so as to define a group having predetermined size and shape characteristics relative to said size and shape char-

acteristics of said data.

6. The apparatus of claim 5 wherein said means for selecting selects said other pixels so as to define said group with a shape which substantially matches the shape of a selected data shape.

7. The apparatus of claim 6 wherein said means for selecting includes means for selecting a variable size for said group such that said group size can be substantially matched to the size of a selected area of data.

8. An apparatus for removing background noise from a digital image which displays data spatially as a plurality of pixels in a raster display, each pixel having a value, comprising:
means for digitizing an image containing said data and background noise to generate a first image;
means for removing said background noise by repeated simultaneous processing of selected groups of pixel pairs between a copy of said first image hereafter called a copy image and said first image to generate a background image from said copy image; and
means for subtracting said background image from said first image.

9. The apparatus of claim 1 wherein said selected group of pixels includes a kernel of pixels in said copy image which define a shape and size in said copy image which have predetermined relationships to the shape and size of selected data in said first image.

10. The apparatus of claim 8 wherein said means for removing includes means to select said pixels in said kernel to define a predetermined shape relative to the shape of data to be analyzed in said first image and further comprising means to select a variable sized group of said pixels in said kernel so as to maintain said predetermined shape but sized according to an input signal.

11. The apparatus of claim 8 wherein said means for removing includes means to select said pixels in said kernel so as to have a shape which matches the typical shape of data to be analyzed in said first image and so as to have a size which is larger than the largest sized group of data pixels to be analyzed.

12. The apparatus of claim 9 further comprising means to remove high-frequency, large-amplitude noise from said background image to generate a smoothed image.

13. The apparatus of claim 12 further comprising means for removing high-frequency, low-amplitude noise from said smoothed image to generate a filtered background image.

14. The apparatus of claim 8 further comprising means for removing high-frequency, low-amplitude noise from said background image from said first image.

15. The apparatus of claim 8 further comprising means for removing high-frequency, large amplitude noise from said background image before subtracting said background image from said first image.

16. An automated noise removal system in a system to graphically display data spatially as areas of varying intensity on a video display to preserve the intensity of data-bearing data displayed in spatial features of greater than a predetermined size while removing background noise also displayed graphically and spatially on a video display comprising:
a uniform illumination light box on which a transparent or translucent medium is placed, said medium having spatially depicted thereon the data to be analyzed;
a video camera positioned adjacent said light box so that there is an optical pathway therebetween, said camera providing a video output comprising an analog video signal depicting said data on said medium in terms of the spatial patterns of light intensity of light from said light box which passes through said medium with said light intensity being modulated by the spatial patterns of data and background noise depicted on said medium;
converter means coupled to receive said analog video signal for converting said analog video signal to a stream of digital data and for storing said digital data in a memory to define a digital first image comprised of a plurality of pixels arranged in rows and columns spatially displaying said data along with background noise;
background removal means coupled to said converter means for simultaneously comparing the intensity value at each pixel in said first image with a corresponding, predetermined intensity value of a pixel in an offset image, where said offset image is a copy of said first image but offset from said first image by a predetermined number of rows and columns, and at each pixel location in said offset image establishing the intensity value as the intensity value which is smallest as between the pair of compared pixel intensity values which correspond to said pixel location in said offset image and for repeating the offsetting and comparison and writing of intensity values for the offset image for each of a plurality of different offset values defining a neighborhood shape for a predetermined group of pixels in said first image thereby establishing said offset image as a background image where each selected pixel's intensity value corresponds to the minimum intensity value for all pixels in a group of pixels in said first image which are adjacent to the pixel which corresponds to said selected pixel when there is a zero row-and-column offset, said group of pixels defining a shape having the shape of said neighborhood;
means for subtracting said background image from

said first image on a pixel-by-pixel basis to generate a background-removed image; and
means for converting said background-removed image to a video signal and for displaying said video signal on a video display.

17. An operator-interactive automated noise background removal system to preserve the amplitude of data-bearing spatial features greater than a prescribed size while removing background and high-frequency noise from an image of biological data acquired from an autoradiograph, electrophoresis gel, fluorescence gel, photographic film or other media, said system comprising:
a means for displaying an image containing data shown by spatial patterns of varying intensity;
image conversion means for generating video output data from said image and positioned adjacent said means for displaying said image so that there is an optical pathway therebetween, said image conversion means for converting said image to video output data at a video output;
background detector means connected via an analog-to-digital converter pathway for receiving video output data and converting said video data to digital data, said background detector means processing said digital data so as to detect valid background values within the image of data;
computer means connected to said background detector means and having an interactive mode for the operator to specify upper size bounds of valid spatial features, said background detector determining the background neighborhood used in surrounding spatial features of the data;
monitor means connected to said background detector means and responsive to said video output for displaying a television image of said background-removed data;

18. The system of claim 17, wherein said background detector system means comprises means for converting said optical image data to digital image data and for causing said optical image data to be, upon receipt of a reverse command, converted to reverse video digital data after said conversion to digital image data.

19. The system of claim 18, wherein said means for converting comprises an analog to digital converter.

20. The system of claim 17, wherein said background detector means comprises first, second and third discriminators for detecting when said received digital data is valid signal comprising spatial features in the biological data.

21. The system of claim 20, wherein said first discriminator means comprises means for generating a background image which is subtracted from said image of biological data.

22. The system of claim 21, wherein said background image comprises digital image data which consists of a rectangular array of pixels each of whose intensity is the minimum within a neighborhood of each pixel in said biological image data.

23. The system of claim 22, wherein said array of pixels comprises digital data having digital intensity values which are shades of gray when displayed on said monitor means.

24. The system of claim 20, wherein said second discriminator means comprises means for determination of a neighborhood size for use in discriminating out noise which enables measurement of the amplitude of features and objects in said image of biological data where the base plateau beneath the features and objects is nonuniform.

25. The system of claim 22, wherein said third discriminator means comprises means for smoothing of said background image by removing or damping high-frequency, low-amplitude noise in said background image of biological data.

26. The system of claim 22, wherein said fourth discriminator means comprises means for clipping of said background image so as to clip noise which is high frequency as compared with the frequency of the signal for said data-bearing spatial features which is also high amplitude relative to the amplitude of the signal in said image of biological data where data-bearing spatial features are not present.

27. The system of claim 17, wherein said background detector includes means for subtraction of said background image from said image of biological data which preserves data-bearing spatial features and enables measurement of the amplitude of the signal comprising data-bearing spatial features within said image of biological data.

28. The system of claim 24, wherein said second discriminator means further comprises means for selecting neighborhood size through user interaction to separate data-bearing spatial features in said images of biological data so as to pick a neighborhood size and shape suited to enable measurement of quantity of biological materials represented by multiple data-bearing spatial features in close proximity.

29. The system of claim 17, wherein said computer means is connected to said image conversion means for receiving video output data therefrom, said computer means comprising a video interface for converting said video output data to digital signals and storing the digital signals.

30. The system of claim 17, wherein said computer means comprises an interface circuit and a computer connected thereto, said interface circuit converting digital signals received form said computer to analog signals and sending said analog signals to said monitor means, in response to which said monitor means displays said background-removed images of valid spatial fea-

tures.

31. An apparatus for removal of noise from a digital image displaying data spatially as a plurality of pixels on a raster-scanned video display comprising:
a background removal circuit for making a copy of said digital image and comparing a selected pixel in said digital image to a neighborhood of adjacent pixels using said copy and finding the minimum pixel value in said neighborhood and setting a pixel in said copy cor responding to said selected pixel to said minimum pixel value and for doing this process simultaneously for a predetermined number of pixels in said digital image to convert said copy to a background image;
a subtracter for subtracting said background image from said digital image to remove noise from said digital image.

32. The apparatus of claim 31 further comprising a circuit for receiving data regarding the size and shape of said neighborhood best suited for optimal noise removal and for causing said background removal circuit to use such a neighborhood in noise removal.

33. The apparatus of claim 32 further comprising a high-frequency filter in said background removal circuit for removing high-frequency noise from said background image before subtracting said background image from said digital image.

34. A method of removing noise from a data-bearing image spatially displaying data, comprising the steps of:
simultaneously comparing each pixel in said image to a neighborhood of adjacent pixels and setting said each pixel to the minimum value found in said neighborhood to generate a background image;
subtracting said background image from said data-bearing image.

35. The method of claim 34 further comprising the step of selecting the size and shape of said neighborhood for optimum removal of noise from said data-bearing image given the size and shape of said spatial displays of data.

36. The method of claim 35 further comprising the step of removing or damping high-frequency noise in said background image before subtracting said background image from said data-bearing image.

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000000  80 0B 00 09 61 63 71 39-36 67 6F 2E 63 61 88 07   ....acq96go.ca..
000010  00 00 00 4D 53 20 43 6E-88 09 00 00 9F 4C 4C 49   ...MS Cn.....LLI
000020  42 43 45 25 88 06 00 00-9D 32 6C 4F E8 88 06 00   BCE%.....2lO....
000030  00 A1 01 43 56 37 96 4C-00 00 06 44 47 52 4F 55   ...CV7.L...DGROU
000040  50 0C 41 43 51 39 36 47-4F 5F 54 45 58 54 04 43   P.ACQ96GO_TEXT.C
000050  4F 44 45 05 5F 44 41 54-41 04 44 41 54 41 05 43   ODE._DATA.DATA.C
000060  4F 4E 53 54 04 5F 42 53-53 03 42 53 53 08 46 41   ONST._BSS.BSS.FA
000070  52 5F 44 41 54 41 0D 41-43 51 39 36 47 4F 35 5F   R_DATA.ACQ96GO5_
000080  44 41 54 41 51 98 07 00-48 58 15 03 04 01 A4 98   DATAQ...HX......
000090  07 00 48 B6 06 05 06 01-51 98 07 00 48 0E 00 07   ..H.....Q...H...
0000A0  07 01 FC 98 07 00 48 F0-00 08 09 01 17 98 07 00   ......H.........
0000B0  68 00 06 0B 0A 01 DD 9A-08 00 02 FF 03 FF 04 FF   h...............
0000C0  02 56 9C 0D 00 00 03 01-02 02 01 03 04 40 01 45   .V...........@.E
0000D0  01 C0 8C 19 00 0A 5F 5F-61 63 72 74 75 73 65 64   ......__acrtused
0000E0  00 0A 5F 6D 6F 76 65 5F-67 72 69 64 00 13 B4 14   .._move_grid....
0000F0  00 11 61 63 71 5F 61 6E-64 5F 61 6C 69 67 6E 5F   ..acq_and_align_
000100  39 36 77 00 B1 8C 1A 00-05 5F 7A 65 72 6F 00 10   96w......_zero..
000110  5F 67 65 74 5F 70 72 6F-62 65 31 5F 6E 61 6D 65   _get_probe1_name
000120  00 DF B4 15 00 12 64 65-66 69 6E 65 5F 65 6C 6C   ......define_ell
000130  69 70 73 65 5F 39 36 77-00 28 8C BC 00 04 5F 6F   ipse_96w.(...._o
000140  6E 65 00 0B 5F 73 70 72-69 6E 74 66 00 10 5F 67   ne.._sprintf.._g
000150  65 74 5F 70 72 6F 62 65-32 5F 6E 61 6D 65 00 04   et_probe2_name..
000160  5F 74 77 6F 00 08 5F 6D-65 6E 75 5F 75 70 00 10   _two.._menu_up..
000170  5F 67 65 74 5F 70 72 6F-62 65 33 5F 6E 61 6D 65   _get_probe3_name
000180  00 10 5F 67 65 74 5F 70-72 6F 62 65 34 5F 6E 61   .._get_probe4_na
000190  6D 65 00 0B 5F 62 6C 69-6E 6B 5F 69 74 65 6D 00   me.._blink_item.
0001A0  0F 5F 64 72 61 77 5F 6D-65 6E 75 5F 69 74 65 6D   ._draw_menu_item
0001B0  00 0A 5F 6D 65 6E 75 5F-64 6F 77 6E 00 1C 5F 67   .._menu_down.._g
0001C0  65 74 5F 73 74 61 6E 64-61 72 64 5F 67 72 69 64   et_standard_grid
0001D0  5F 73 74 72 75 63 74 75-72 65 00 0A 5F 6D 65 6E   _structure.._men
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000220  73 00 09 5F 69 6D 5F 63-6C 65 61 72 00 06 5F 63   s.._im_clear.._c
000230  6C 5F 77 6E 00 09 5F 63-6C 5F 6F 76 6C 75 74 00   l_wn.._cl_ovlut.
000240  0B 5F 66 69 6E 64 5F 64-65 6E 39 36 00 07 5F 6C   ._find_den96.._l
000250  6C 5F 61 6C 75 00 09 5F-67 72 61 70 68 69 6E 74   l_alu.._graphint
000260  00 0A 5F 6C 6C 5F 62 61-73 5F 66 62 00 1C 5F 70   .._ll_bas_fb.._p
000270  75 74 5F 73 74 61 6E 64-61 72 64 5F 67 72 69 64   ut_standard_grid
000280  5F 73 74 72 75 63 74 75-72 65 00 0C 5F 69 6D 5F   _structure.._im_
000290  67 72 61 70 68 77 69 6E-00 0A 5F 6C 6C 5F 77 69   graphwin.._ll_wi
0002A0  6E 5F 66 62 00 0D 5F 6D-65 73 73 61 67 65 5F 61   n_fb.._message_a
0002B0  72 65 61 00 13 5F 67 65-74 5F 65 78 70 65 72 69   rea.._get_experi
0002C0  6D 65 6E 74 5F 6B 65 79-00 EE B4 0F 00 0C 64 72   ment_key......dr
0002D0  61 77 5F 65 6C 6C 69 70-73 65 00 36 8C 46 00 08   aw_ellipse.6.F..
```

MODULE 1

APPENDIX A

```
0002E0   5F 6C 6C 5F 6D 6F 64 65-00 0A 5F 69 6D 5F 6F 70   _ll_mode.._im_op
0002F0   6D 6F 64 65 00 12 5F 63-6C 65 61 72 5F 61 63 74   mode.._clear_act
000300   69 6F 6E 5F 61 72 65 61-00 07 5F 6C 6C 5F 62 75   ion_area.._ll_bu
000310   73 00 10 5F 63 6C 65 61-72 5F 6D 65 6E 75 5F 61   s.._clear_menu_a
000320   72 65 61 00 13 B4 17 00-14 62 75 69 6C 64 5F 69   rea......build_i
000330   6D 61 67 65 5F 66 69 6C-65 6E 61 6D 65 00 0F 8C   mage_filename...
000340   A6 00 13 5F 63 6C 65 61-72 5F 6D 65 73 73 61 67   ..._clear_messag
000350   65 5F 61 72 65 61 00 0C-5F 69 6D 5F 66 72 6F 6D   e_area.._im_from
000360   64 69 73 6B 00 14 5F 77-72 69 74 65 5F 61 6C 6C   disk.._write_all
000370   5F 73 74 61 6E 64 61 72-64 73 00 08 5F 66 6C 69   _standards.._fli
000380   63 6B 65 72 00 0D 5F 69-6D 5F 64 69 73 66 6F 72   cker.._im_disfor
000390   6D 61 74 00 0C 5F 6C 6C-5F 74 6B 5F 66 69 65 6C   mat.._ll_tk_fiel
0003A0   64 00 0B 5F 69 6D 5F 6F-75 74 70 61 74 68 00 07   d.._im_outpath..
0003B0   5F 6D 6F 75 73 65 72 00-08 5F 69 6D 5F 73 79 6E   _mouser.._im_syn
0003C0   63 00 09 5F 69 6D 5F 76-69 64 65 6F 00 06 5F 6F   c.._im_video.._o
0003D0   76 6C 75 74 00 07 5F 64-65 6E 39 36 77 00 07 5F   vlut.._den96w.._
0003E0   65 72 72 6D 73 67 00 62-B0 16 00 10 5F 61 63 71   errmsg.b...._acq
0003F0   39 36 67 6F 5F 65 6C 6C-69 70 73 65 00 61 0C 01   96go_ellipse.a..
000400   96 8C DC 00 12 5F 67 65-74 5F 70 69 63 5F 64 69   ....._get_pic_di
000410   72 65 63 74 6F 72 79 00-05 5F 65 78 69 74 00 0F   rectory.._exit..
000420   5F 73 65 74 5F 6D 65 6E-75 5F 74 69 74 6C 65 00   _set_menu_title.
000430   06 5F 6B 5F 65 78 70 00-13 5F 67 65 74 5F 63 61   ._k_exp.._get_ca
000440   6D 69 6E 69 74 5F 76 61-6C 75 65 73 00 0C 5F 69   minit_values.._i
000450   6D 5F 73 65 74 63 6F 6C-6F 72 00 15 5F 63 6C 6F   m_setcolor.._clo
000460   73 65 5F 73 74 61 6E 64-61 72 64 73 5F 66 69 6C   se_standards_fil
000470   65 00 0C 5F 69 6D 5F 64-72 61 77 6D 6F 64 65 00   e.._im_drawmode.
000480   07 5F 76 5F 70 6C 73 74-00 08 5F 69 6D 5F 6D 6F   ._v_plst.._im_mo
000490   76 65 00 13 5F 70 75 74-5F 63 61 6D 69 6E 69 74   ve.._put_caminit
0004A0   5F 76 61 6C 75 65 73 00-0E 5F 67 65 74 5F 73 74   _values.._get_st
0004B0   61 6E 64 61 72 64 73 00-0B 5F 69 6D 5F 65 6C 6C   andards.._im_ell
0004C0   69 70 73 65 00 0C 5F 73-65 74 5F 6D 65 73 73 61   ipse.._set_messa
0004D0   67 65 00 0A 5F 69 6D 5F-6F 66 66 73 65 74 00 D4   ge.._im_offset..
0004E0   B0 13 00 0D 5F 61 63 71-39 36 67 6F 5F 67 72 69   ...._acq96go_gri
0004F0   64 00 61 0C 01 E4 8C 0E-01 08 5F 69 6D 5F 67 61   d.a......._im_ga
000500   69 6E 00 0D 5F 53 65 74-43 75 72 73 6F 72 50 6F   in.._SetCursorPo
000510   73 00 11 5F 73 65 74 5F-73 63 72 65 65 6E 5F 74   s.._set_screen_t
000520   69 74 6C 65 00 0B 5F 77-72 69 74 65 5F 67 72 69   itle.._write_gri
000530   64 00 0C 5F 69 6D 5F 73-6F 66 74 69 6E 69 74 00   d.._im_softinit.
000540   1B 5F 73 68 6F 77 5F 73-74 61 6E 64 61 72 64 5F   ._show_standard_
000550   6D 65 6E 75 5F 61 63 74-69 6F 6E 73 00 06 5F 62   menu_actions.._b
000560   64 72 5F 30 00 0F 5F 63-6C 6F 73 65 5F 64 61 74   dr_0.._close_dat
000570   61 62 61 73 65 00 05 5F-6D 6F 76 65 00 1C 5F 75   abase.._move.._u
000580   70 64 61 74 65 5F 6D 6F-75 73 65 5F 62 75 74 74   pdate_mouse_butt
000590   6F 6E 5F 64 69 73 70 6C-61 79 00 1C 5F 77 61 69   on_display.._wai
0005A0   74 5F 66 6F 72 5F 6D 6F-75 73 65 5F 62 75 74 74   t_for_mouse_butt
0005B0   6F 6E 5F 70 72 65 73 73-00 1E 5F 77 61 69 74 5F   on_press.._wait_
```

```
0005C0   66 6F 72 5F 6D 6F 75 73-65 5F 62 75 74 74 6F 6E   for_mouse_button
0005D0   5F 72 65 6C 65 61 73 65-00 08 5F 69 6D 5F 77 6C   _release.._im_wl
0005E0   75 74 00 08 5F 69 6D 5F-6D 61 73 6B 00 0B 5F 62   ut.._im_mask.._b
0005F0   75 69 6C 64 5F 6B 65 79-73 00 0A 5F 69 6D 5F 63   uild_keys.._im_c
000600   73 74 61 72 74 00 A4 B4-0C 00 09 64 72 61 77 5F   start.....draw_
000610   67 72 69 64 00 84 8C 3C-00 09 5F 69 6D 5F 63 67   grid...<.._im_cg
000620   72 61 62 00 0E 5F 6F 70-65 6E 5F 64 61 74 61 62   rab.._open_datab
000630   61 73 65 00 09 5F 69 6D-5F 69 6E 6D 61 70 00 13   ase.._im_inmap..
000640   5F 61 63 71 75 69 72 65-5F 69 6E 74 65 67 72 61   _acquire_integra
000650   74 65 64 00 55 B4 1F 00-10 61 63 71 39 36 67 6F   ted.U....acq96go
000660   5F 6D 76 70 5F 69 6E 69-74 00 0A 61 6C 74 65 72   _mvp_init..alter
000670   5F 67 72 69 64 00 B7 8C-0D 00 0A 5F 69 6D 5F 74   _grid......_im_t
000680   6F 64 69 73 6B 00 3B B4-21 00 0D 61 63 71 5F 66   odisk.;.!..acq_f
000690   69 72 73 74 5F 39 36 77-00 0F 61 64 6A 75 73 74   irst_96w..adjust
0006A0   5F 67 72 69 64 5F 39 36-77 00 39 90 18 00 01 02   _grid_96w.9.....
0006B0   11 5F 61 63 71 39 36 67-6F 5F 69 74 65 6D 6C 69   ._acq96go_itemli
0006C0   73 74 62 01 00 3E B6 2E-00 00 01 11 61 63 71 5F   stb..>......acq_
0006D0   61 6E 64 5F 61 6C 69 67-6E 5F 39 36 77 7A 09 00   and_align_96wz..
0006E0   12 64 65 66 69 6E 65 5F-65 6C 6C 69 70 73 65 5F   .define_ellipse_
0006F0   39 36 77 BC 0E 00 38 90-14 00 01 02 0D 5F 61 63   96w...8......_ac
000700   71 39 36 67 6F 5F 6D 65-6E 75 DA 01 00 84 90 0F   q96go_menu......
000710   00 00 01 08 5F 61 63 71-39 36 67 6F 00 00 00 7F   ...._acq96go...
000720   B6 8B 00 00 01 09 78 5F-61 63 71 39 36 67 6F 32   ......x_acq96go2
000730   00 00 0C 64 72 61 77 5F-65 6C 6C 69 70 73 65 46   ...draw_ellipseF
000740   12 00 14 62 75 69 6C 64-5F 69 6D 61 67 65 5F 66   ...build_image_f
000750   69 6C 65 6E 61 6D 65 FA-08 00 09 64 72 61 77 5F   ilename....draw_
000760   67 72 69 64 16 15 00 10-61 63 71 39 36 67 6F 5F   grid....acq96go_
000770   6D 76 70 5F 69 6E 69 74-A4 12 00 0A 61 6C 74 65   mvp_init....alte
000780   72 5F 67 72 69 64 D4 14-00 0D 61 63 71 5F 66 69   r_grid....acq_fi
000790   72 73 74 5F 39 36 77 1C-07 00 0F 61 64 6A 75 73   rst_96w....adjus
0007A0   74 5F 67 72 69 64 5F 39-36 77 8E 0C 00 01 88 04   t_grid_96w......
0007B0   00 00 A2 01 D1 A0 44 01-02 00 00 61 63 71 69 6D   ......D....acqim
0007C0   67 00 00 70 69 00 00 41-75 74 6F 6D 61 74 69 63   g..pi..Automatic
0007D0   20 61 63 71 75 69 73 69-74 69 6F 6E 20 73 65 71    acquisition seq
0007E0   75 65 6E 63 65 00 41 64-6A 75 73 74 20 67 72 69   uence.Adjust gri
0007F0   64 20 6C 6F 63 61 74 69-6F 6E 20 61 6E 64 20 73   d location and s
000800   69 7A 65 00 53 75 72 72-6F 75 6E 64 20 6C 61 72   ize.Surround lar
000810   67 65 73 74 20 63 6F 6C-6F 6E 79 20 69 6E 20 67   gest colony in g
000820   72 69 64 20 63 65 6C 6C-20 0A 28 49 6E 73 63 72   rid cell .(Inscr
000830   69 62 65 64 20 65 6C 6C-69 70 73 65 20 69 73 20   ibed ellipse is
000840   74 68 65 20 64 65 66 61-75 6C 74 29 00 41 6C 74   the default).Alt
000850   65 72 6E 61 74 65 20 42-65 74 77 65 65 6E 20 49   ernate Between I
000860   6D 61 67 65 73 20 56 69-65 77 65 64 00 41 63 71   mages Viewed.Acq
000870   75 69 73 69 74 69 6F 6E-20 63 6F 6D 70 6C 65 74   uisition complet
000880   65 2C 0A 53 65 6C 65 63-74 20 74 6F 20 63 6F 6E   e,.Select to con
000890   74 69 6E 75 65 20 61 6E-61 6C 79 73 69 73 00 41   tinue analysis.A
```

```
0008A0   63 71 75 69 72 65 20 20-20 20 20 20 20 20 20 20   cquire
0008B0   69 6D 61 67 65 00 41 63-71 75 69 72 65 20 20 20   image.Acquire
0008C0   20 20 20 20 20 20 20 69-6D 61 67 65 00 41 63 71          image.Acq
0008D0   75 69 72 65 20 20 20 20-20 20 20 20 20 20 69 6D   uire          im
0008E0   61 67 65 00 41 63 71 75-69 72 65 20 20 20 20 20   age.Acquire
0008F0   20 20 20 20 20 69 6D 61-67 65 00 8E A0 B9 03 02        image......
000900   38 02 42 69 6F 6C 6F 67-69 63 61 6C 20 56 69 73   8.Biological Vis
000910   69 6F 6E 20 20 2D 20 20-49 6D 61 67 65 20 41 63   ion  -  Image Ac
000920   71 75 69 73 69 74 69 6F-6E 00 49 6D 61 67 65 20   quisition.Image
000930   41 63 71 75 69 73 69 74-69 6F 6E 20 4D 65 6E 75   Acquisition Menu
000940   00 43 6F 75 6C 64 20 6E-6F 74 20 6F 70 65 6E 20   .Could not open
000950   74 68 65 20 64 61 74 61-62 61 73 65 20 66 69 6C   the database fil
000960   65 2E 00 43 6F 75 6C 64-20 6E 6F 74 20 66 69 6E   e..Could not fin
000970   64 20 65 78 70 65 72 69-6D 65 6E 74 20 72 65 63   d experiment rec
000980   6F 72 64 20 69 6E 20 64-61 74 61 62 61 73 65 20   ord in database
000990   66 6F 72 20 6B 65 79 20-25 6C 64 2E 00 43 6F 75   for key %ld..Cou
0009A0   6C 64 20 6E 6F 74 20 6F-70 65 6E 20 74 68 65 20   ld not open the
0009B0   73 74 61 6E 64 61 72 64-73 20 66 69 6C 65 20 66   standards file f
0009C0   6F 72 20 6B 65 79 20 25-6C 64 2E 00 00 41 63 71   or key %ld...Acq
0009D0   75 69 72 65 20 00 20 69-6D 61 67 65 00 41 43 51   uire . image.ACQ
0009E0   55 49 53 49 54 49 4F 4E-20 2D 20 39 36 2D 57 45   UISITION - 96-WE
0009F0   4C 4C 00 41 43 51 55 49-53 49 54 49 4F 4E 20 2D   LL.ACQUISITION -
000A00   20 39 36 2D 57 45 4C 4C-00 41 6C 69 67 6E 20 25    96-WELL.Align %
000A10   73 20 69 6D 61 67 65 20-77 69 74 68 20 67 72 69   s image with gri
000A20   64 2C 20 70 72 65 73 73-20 6D 6F 75 73 65 20 62   d, press mouse b
000A30   75 74 74 6F 6E 20 77 68-65 6E 20 64 6F 6E 65 2E   utton when done.
000A40   00 54 68 65 20 67 61 69-6E 20 61 6E 64 20 6F 66   .The gain and of
000A50   66 73 65 74 20 76 61 6C-75 65 20 66 6F 72 20 69   fset value for i
000A60   6D 61 67 65 20 25 73 20-61 72 65 20 25 33 64 20   mage %s are %3d
000A70   61 6E 64 20 25 33 64 2E-00 53 61 76 69 6E 67 20   and %3d..Saving
000A80   61 63 71 75 69 72 65 64-20 69 6D 61 67 65 20 74   acquired image t
000A90   6F 20 64 69 73 6B 20 3A-20 25 73 00 25 73 25 73   o disk : %s.%s%s
000AA0   25 73 2E 25 73 25 73 25-64 00 25 73 25 73 25 64   %s.%s%s%d.%s%s%d
000AB0   25 73 2E 25 73 25 73 00-41 6C 69 67 6E 20 25 73   %s.%s%s.Align %s
000AC0   20 69 6D 61 67 65 20 75-6E 64 65 72 20 63 61 6D    image under cam
000AD0   65 72 61 2C 20 6D 69 6E-69 6D 69 7A 69 6E 67 20   era, minimizing
000AE0   74 68 65 20 66 65 61 74-75 72 65 73 20 6F 66 20   the features of
000AF0   74 68 65 00 64 69 66 66-65 72 65 6E 63 65 20 69   the.difference i
000B00   6D 61 67 65 2E 20 20 50-72 65 73 73 20 6D 6F 75   mage.  Press mou
000B10   73 65 20 62 75 74 74 6F-6E 20 77 68 65 6E 20 64   se button when d
000B20   6F 6E 65 2E 00 50 72 65-73 73 20 61 6E 79 20 62   one..Press any b
000B30   75 74 74 6F 6E 20 74 6F-20 00 61 63 63 65 70 74   utton to .accept
000B40   20 69 6D 61 67 65 20 61-6C 69 67 6E 6D 65 6E 74    image alignment
000B50   2E 00 54 68 65 20 67 61-69 6E 20 61 6E 64 20 6F   ..The gain and o
000B60   66 66 73 65 74 20 76 61-6C 75 65 20 66 6F 72 20   ffset value for
000B70   69 6D 61 67 65 20 25 73-20 61 72 65 20 25 33 64   image %s are %3d
```

```
000B80   20 61 6E 64 20 25 33 64-2E 00 53 61 76 69 6E 67    and %3d..Saving
000B90   20 61 63 71 75 69 72 65-64 20 69 6D 61 67 65 20    acquired image
000BA0   74 6F 20 64 69 73 6B 20-3A 20 25 73 00 41 64 6A   to disk : %s.Adj
000BB0   75 73 74 20 67 72 69 64-20 70 6F 73 69 74 69 6F   ust grid positio
000BC0   6E 20 61 6E 64 20 64 69-6D 65 6E 73 69 6F 6E 73   n and dimensions
000BD0   20 75 73 69 6E 67 20 74-68 65 20 6D 6F 75 73 65    using the mouse
000BE0   2E 00 4D 6F 76 65 20 6D-6F 75 73 65 20 74 6F 20   ..Move mouse to
000BF0   6D 6F 76 65 20 67 72 69-64 2E 00 48 6F 6C 64 20   move grid..Hold
000C00   64 6F 77 6E 20 6C 65 66-74 20 62 75 74 74 6F 6E   down left button
000C10   20 74 6F 00 63 68 61 6E-67 65 20 67 72 69 64 20    to.change grid
000C20   64 69 6D 65 6E 73 69 6F-6E 73 2E 00 28 6D 6F 76   dimensions..(mov
000C30   65 73 20 6C 6F 77 65 72-20 72 69 67 68 74 20 63   es lower right c
000C40   6F 72 6E 65 72 29 00 50-72 65 73 73 20 72 69 67   orner).Press rig
000C50   68 74 20 62 75 74 74 6F-6E 20 74 6F 00 72 65 74   ht button to.ret
000C60   75 72 6E 20 74 6F 20 74-68 65 20 6D 65 6E 75 2E   urn to the menu.
000C70   00 41 64 6A 75 73 74 20-70 6F 73 69 74 69 6F 6E   .Adjust position
000C80   20 61 6E 64 20 64 69 6D-65 6E 73 69 6F 6E 73 20    and dimensions
000C90   6F 66 20 74 68 65 20 65-6C 6C 69 70 74 69 63 61   of the elliptica
000CA0   6C 20 72 65 67 69 6F 6E-20 75 73 69 6E 67 20 74   l region using t
000CB0   68 65 20 6D 6F 75 73 44-A0 8C 00 02 ED 05 65 2E   he mousD......e.
000CC0   00 4D 6F 76 65 20 6D 6F-75 73 65 20 74 6F 20 6D   .Move mouse to m
000CD0   6F 76 65 20 72 65 67 69-6F 6E 2E 00 48 6F 6C 64   ove region..Hold
000CE0   20 64 6F 77 6E 20 6C 65-66 74 20 62 75 74 74 6F    down left butto
000CF0   6E 20 74 6F 00 63 68 61-6E 67 65 20 64 69 6D 65   n to.change dime
000D00   6E 73 69 6F 6E 73 20 6F-66 00 61 72 65 61 20 6F   nsions of.area o
000D10   66 20 69 6E 74 65 72 65-73 74 2E 00 50 72 65 73   f interest..Pres
000D20   73 20 72 69 67 68 74 20-62 75 74 74 6F 6E 20 74   s right button t
000D30   6F 00 72 65 74 75 72 6E-20 74 6F 20 74 68 65 20   o.return to the
000D40   6D 65 6E 75 2E 00 C9 A0-07 00 02 40 01 64 00 32   menu.......@.d.2
000D50   80 A0 07 00 02 44 01 96-B4 C8 00 A0 AE 00 02 48   .....D.........H
000D60   01 CC 00 33 00 00 00 00-00 07 00 00 00 08 00 00   ...3............
000D70   00 0B 00 00 00 01 00 00-00 00 00 00 00 03 00 02   ................
000D80   00 26 00 0C 00 00 00 09-00 04 00 01 00 26 00 2B   .&...........&.+
000D90   00 00 00 0B 00 04 00 02-00 26 00 49 00 00 00 0E   .........&.I....
000DA0   00 04 00 01 00 26 00 92-00 00 00 10 00 04 00 02   .....&..........
000DB0   00 26 00 B2 00 00 00 03-00 04 00 01 00 26 00 E4   .&...........&..
000DC0   00 00 00 04 00 04 00 01-00 26 00 FB 00 00 00 05   .........&......
000DD0   00 04 00 01 00 26 00 12-01 00 00 06 00 04 00 01   .....&..........
000DE0   00 26 00 29 01 00 00 00-00 00 00 00 00 00 00 00   .&.)............
000DF0   00 00 00 02 00 03 00 12-00 2D 00 00 00 00 00 02   .........-......
000E00   00 01 00 00 00 00 00 62-01 00 00 FA 9C 2F 00 CC   .......b...../..
000E10   A6 9D CC 9A 56 4F CC 82-9D CC 76 9D CC 6A 9D CC   ....VO....v..j..
000E20   5E 9D CC 52 9D CC 46 9D-CC 3A 9D CC 2E 9D CC 22   ^..R..F..:.....".
000E30   9D CC 10 9D CC 0C 9D CC-08 9D CC 04 9D BC A2 0B   ................
000E40   00 02 F2 01 23 00 00 00-02 00 00 39 A0 44 00 02   ....#......9.D..
000E50   76 06 43 6F 70 79 72 69-67 68 74 20 28 63 29 20   v.Copyright (c)
```

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000E60  31 39 38 39 2C 20 42 69-6F 6C 6F 67 69 63 61 6C  1989, Biological
000E70  20 56 69 73 69 6F 6E 20-49 6E 63 2E 20 20 41 6C   Vision Inc.  Al
000E80  6C 20 72 69 67 68 74 73-20 72 65 73 65 72 76 65  l rights reserve
000E90  64 00 4B A0 36 00 01 00-00 C8 00 00 00 1E B8 00  d.K.6...........
000EA0  00 8E D8 8B 46 06 A3 5E-01 8B 46 08 A3 60 01 8B  ....F..^..F..`..
000EB0  46 0A 0B 46 0C 74 0D 8B-46 0A 8B 56 0C A3 4C 01  F..F.t..F..V..L.
000EC0  89 16 4E 01 0E E8 00 00-1F C9 CB 67 9C 14 00 84  ..N........g....
000ED0  2D 56 15 C4 29 9D C4 25-9D C4 14 9D C4 0E 9D C8  -V..)..%........
000EE0  06 9D D5 A0 0A 00 03 00-00 00 00 00 00 00 00 53  ...............S
000EF0  9C 0D 00 C8 04 56 48 C8-02 56 38 C8 00 56 36 41  .....VH..V8..V6A
000F00  A0 B6 03 01 32 00 C8 FE-00 00 57 56 1E B8 00 00  ....2.....WV....
000F10  8E D8 1E 68 38 02 9A 00-00 00 00 83 C4 04 1E 68  ...h8..........h
000F20  60 02 9A 00 00 00 00 83-C4 04 9A 00 00 00 00 9A  `...............
000F30  00 00 00 00 9A 00 00 00-00 9A 00 00 00 00 9A 00  ................
000F40  00 00 00 89 46 F0 89 56-F2 0B D2 7F 0F 7C 05 3D  ....F..V....|.=
000F50  01 00 73 08 2B C0 89 46-F2 89 46 F0 9A 00 00 00  ..s.+..F..F.....
000F60  00 9A 00 00 00 00 89 46-F0 89 56 F2 0B D2 7F 0F  .......F..V....
000F70  7C 05 3D 01 00 73 08 2B-C0 89 46 F2 89 46 F0 9A  |.=..s.+..F..F..
000F80  00 00 00 00 0B C0 75 1B-9A 00 00 00 00 1E 68 77  ......u.......hw
000F90  02 9A 00 00 00 00 83 C4-04 6A 00 9A 00 00 00 00  .........j......
000FA0  83 C4 02 8E 06 00 00 8B-46 F0 8B 56 F2 26 A3 04  ........F..V.&..
000FB0  00 26 89 16 06 00 6A 05-6A 05 B8 00 00 BA 00 00  .&....j.j.......
000FC0  52 50 9A 00 00 00 00 83-C4 08 0B C0 75 21 9A 00  RP..........u!..
000FD0  00 00 00 FF 76 F2 FF 76-F0 1E 68 99 02 9A 00 00  ....v..v..h.....
000FE0  00 00 83 C4 08 6A 00 9A-00 00 00 00 83 C4 02 FF  .....j..........
000FF0  76 F2 FF 76 F0 9A 00 00-00 00 83 C4 04 89 46 F6  v..v..........F.
001000  89 56 F8 0B D0 75 21 9A-00 00 00 00 FF 76 F2 FF  .V...u!......v..
001010  76 F0 1E 68 D3 02 9A 00-00 00 00 83 C4 08 6A 00  v..h..........j.
001020  9A 00 00 00 00 83 C4 02-B8 0A 00 BA 00 00 52 50  ..............RP
001030  B8 08 00 52 50 B8 06 00-52 50 B8 04 00 52 50 B8  ...RP...RP...RP.
001040  0A 00 BA 00 00 52 50 B8-08 00 52 50 B8 06 00 52  .....RP...RP...R
001050  50 B8 04 00 52 50 B8 02-00 52 50 B8 00 00 52 50  P...RP...RP...RP
001060  9A 00 00 00 00 83 C4 28-9A 00 00 00 00 89 86 16  .......(........
001070  FF 89 96 18 FF 9A 00 00-00 00 89 86 1A FF 89 96  ................
001080  1C FF 9A 00 00 00 00 89-86 1E FF 89 96 20 FF 9A  ..............  ..
001090  00 00 00 00 89 86 22 FF-89 96 24 FF 1E 68 4A 01  ......"...$..hJ.
0010A0  1E 68 48 01 9A 00 00 00-00 83 C4 08 9A 00 00 00  .hH.............
0010B0  00 83 3E 48 01 00 75 13-83 3E 4A 01 00 75 0C C7  ..>H..u..>J..u..
0010C0  06 48 01 CC 00 C7 06 4A-01 33 00 FF 36 4A 01 9A  .H.....J.3..6J..
0010D0  00 00 00 00 83 C4 02 FF-36 48 01 9A 00 00 00 00  ........6H......
0010E0  83 C4 02 2B F6 8D 86 16-FF 89 86 12 FF 8C 96 14  ...+............
0010F0  FF C4 9E 12 FF 26 C4 1F-B9 01 00 56 BF 02 03 8B  .....&.....V....
001100  F3 1E 1E 06 1F 07 D1 E9-1B C0 3B C9 F3 A7 75 04  ...........;...u.
001110  2B C8 F3 A6 1F 5E 74 03-E9 5D 02 89 76 FC C7 46  +....^t..]..v..F
001120  F4 00 00 0B F6 7F 03 E9-D1 00 8D 86 28 FF 89 86  ............(...
001130  12 FF 8C 96 14 FF 8D 86-16 FF 89 86 0E FF 8C 96  ................
```

```
001140   10 FF BE A6 01 8B 7E FC-8B C7 01 46 F4 B9 09 00   .......~....F....
001150   56 57 BE 03 03 C4 BE 12-FF D1 E9 F2 A5 13 C9 F2   VW..............
001160   A4 5F 5E C4 9E 0E FF 26-8B 07 26 8B 57 02 8B D8   ._^.....&..&.W...
001170   89 9E 06 FF 89 96 08 FF-57 56 C4 BE 06 FF 1E C5   ........WV......
001180   B6 12 FF B9 FF FF 33 C0-F2 AE F7 D1 2B F9 8B D9   ......3.....+...
001190   87 FE 8C DA 06 8E C2 1F-B9 FF FF F2 AE 4F 8B CB   .............O..
0011A0   D1 E9 F2 A5 13 C9 F2 A4-1F 5E 5F 57 56 BF 0C 03   .........^_WV...
0011B0   8C D8 8E C0 1E C5 B6 12-FF B9 FF FF 33 C0 F2 AE   ............3...
0011C0   F7 D1 2B F9 8B D9 87 FE-06 8E C2 1F B9 FF FF F2   ..+.............
0011D0   AE 4F 8B CB D1 E9 F2 A5-13 C9 F2 A4 1F 5E 5F 8B   .O...........^_.
0011E0   86 12 FF 89 04 89 54 02-83 86 12 FF 32 83 86 0E   ......T.....2...
0011F0   FF 04 83 C6 0C 4F 74 03-E9 52 FF 8B 46 FC 89 46   .....Ot..R..F..F
001200   F4 3D 04 00 7D 7B 8B D0-D1 E0 03 C2 D1 E0 D1 E0   .=..}{..........
001210   89 86 02 FF 8B F0 81 C6-9E 01 8B F8 81 C7 A0 01   ................
001220   05 A2 01 89 86 0C FF 8B-86 02 FF 05 A4 01 89 86   ................
001230   0E FF 8B 86 02 FF 05 A6-01 89 86 12 FF B8 04 00   ................
001240   2B C2 8B C8 01 4E F4 C7-04 00 00 C7 05 00 00 8B   +....N..........
001250   9E 0C FF C7 07 00 00 8B-9E 0E FF C7 07 00 00 8B   ................
001260   9E 12 FF 2B C0 89 47 02-89 07 83 C6 0C 83 C7 0C   ...+..G.........
001270   83 86 0C FF 0C 83 86 0E-FF 0C 83 86 12 FF 0C E2   ................
001280   C6 C7 46 F4 05 00 B8 04-00 2B 46 FC 8B F8 BE 6E   ..F......+F....n
001290   01 B9 04 00 29 3C 83 C6-0C E2 F9 0E E8 00 00 83   ....)<..........
0012A0   3E 5E 01 00 75 5A 83 7E-FC 01 7C 0F FF B6 18 FF   >^..uZ.~..|.....
0012B0   FF B6 16 FF 0E E8 00 00-3D 9C 0F 01 87 B0 56 61   ........=.....Va
0012C0   C7 9B 9D 87 97 56 5E C7-89 9D C7 31 9D C7 26 9D   .....V^....1..&.
0012D0   C7 1B 9D C7 18 9D C7 12-9D C6 A8 9D C6 4D 9D C6   .............M..
0012E0   3D 9D C5 F7 9D CD D6 56-49 C5 D3 9D CD CA 56 47   =......VI.....VG
0012F0   C5 C7 9D C5 C1 9D C5 BB-9D C5 B4 9D C5 AD 9D CD   ................
001300   A7 56 50 CD 9F 56 3D C5-9C 9D C5 98 9D CD 8A 56   .VP..V=........V
001310   0D CD 7D 56 0C CD 70 56-09 CD 63 56 05 CD 5B 56   ..}V..pV..cV..[V
001320   11 C5 56 56 48 C5 51 56-48 C5 4C 56 48 C5 47 56   ..VVH.QVH.LVH.GV
001330   48 C5 42 56 48 C9 3D 56-48 C5 3A 56 48 C5 35 56   H.BVH.=VH.:VH.5V
001340   38 C5 30 56 38 C5 2B 56-38 C9 26 56 38 C5 23 56   8.0V8.+V8.&V8.#V
001350   38 CD 1B 56 3A CD 11 56-37 C5 0E 9D CD 02 56 14   8..V:..V7.....V.
001360   CC F0 56 44 CC E2 56 3A-CC D8 56 37 C4 D5 9D CC   ..VD..V:..V7....
001370   C9 56 14 CC BD 56 1B C8-B8 56 3C C4 B5 56 3C C4   .V...V...V<..V<.
001380   AE 56 36 C4 A9 56 36 C4-9F 9C CC 96 56 3A CC 8C   .V6..V6.....V:..
001390   56 37 C4 89 9D CC 83 56-14 CC 7A 56 5B CC 5C 56   V7.....V..zV[.\V
0013A0   23 CC 57 56 57 CC 39 56-23 CC 34 56 54 CC 2F 56   #.WVW.9V#.4VT./V
0013B0   2B CC 2A 56 29 CC 25 56-27 CC 1D 56 3B C4 1A 9D   +.*V).%V'..V;...
0013C0   CC 11 56 4B C4 0E 9D C8-08 9D 8B A0 B5 03 01 E4   ..VK............
0013D0   03 83 C4 04 0E E8 00 00-C7 46 F4 02 00 83 7E FC   .........F....~.
0013E0   02 7C 32 8D 86 1A FF 89-86 06 FF 8C 96 08 FF 8B   .|2.............
0013F0   7E FC 8B 76 F4 C4 9E 06-FF 26 FF 77 02 26 FF 37   ~..v.....&.w.&.7
001400   56 0E E8 00 00 83 C4 06-83 86 06 FF 04 46 3B F7   V............F;.
001410   7E E3 89 76 F4 0E E8 00-00 1E 68 13 03 1E 68 DA   ~..v......h...h.
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001420  01 9A 00 00 00 00 83 C4-08 9A 00 00 00 00 d3 3E  ...............>
001430  5E 01 00 75 1E 6A 05 1E-68 DA 01 9A 00 00 00 00  ^..u.j..h.......
001440  83 C4 06 6A 01 6A 05 1E-68 DA 01 9A 00 00 00 00  ...j.j..h.......
001450  83 C4 08 C7 46 FA 00 00-8B 7E FC 8B 76 F4 68 00  ....F....~..v.h.
001460  00 68 00 00 1E 68 DA 01-9A 00 00 00 00 83 C4 08  .h...h..........
001470  89 86 26 FF 9A 00 00 00-00 8B 86 26 FF 2D 01 00  ..&........&.-..
001480  3D 08 00 76 03 E9 5F 01-03 C0 93 2E FF A7 02 06  =..v.._.........
001490  90 83 B6 12 FF 04 46 83-FE 04 7C 03 E9 95 FD E9  ......F...|.....
0014A0  68 FD 90 83 FF 01 7C 0F-FF B6 18 FF FF B6 16 FF  h.....|.........
0014B0  0E E8 00 00 83 C4 04 0E-E8 00 00 BE 02 00 3B FE  ..............;.
0014C0  7C 29 8D 86 1A FF 89 86-06 FF 8C 96 08 FF C4 9E  |)..............
0014D0  06 FF 26 FF 77 02 26 FF-37 56 0E E8 00 00 83 C4  ..&.w.&.7V......
0014E0  06 83 86 06 FF 04 46 3B-F7 7E E3 0E E8 00 00 E9  ......F;.~......
0014F0  0F 01 90 0E E8 00 00 E9-07 01 90 6A 00 6A 00 9A  ...........j.j..
001500  00 00 00 00 83 C4 04 6A-01 0E E8 00 00 83 C4 02  .......j........
001510  1E 68 00 00 9A 00 00 00-00 83 C4 04 6A 00 6A 02  .h..........j.j.
001520  9A 00 00 00 00 83 C4 04-6A 14 6A 01 6A 00 6A 01  ........j.j.j.j.
001530  6A 00 6A 02 9A 00 00 00-00 83 C4 0C 6A 01 6A 01  j.j.........j.j.
001540  6A 00 9A 00 00 00 00 83-C4 06 6A 01 6A 02 6A FF  j.........j.j.j.
001550  6A 00 9A 00 00 00 00 83-C4 08 6A 01 6A 02 6A FF  j.........j.j.j.
001560  6A 00 9A 00 00 00 00 83-C4 08 6A 00 6A 01 9A 00  j.........j.j...
001570  00 00 00 83 C4 04 6A 01-6A 01 9A 00 00 00 00 83  ......j.j.......
001580  C4 04 1E 68 29 03 1E 68-DA 01 9A 00 00 00 00 83  ...h)..h........
001590  C4 08 EB 6D 90 83 FF 01-7C 67 FF B6 18 FF FF B6  ...m....|g......
0015A0  16 FF 0E E8 00 00 83 C4-04 EB 56 83 FF 02 7C 51  ..........V...|Q
0015B0  FF B6 1C FF FF B6 1A FF-6A 02 0E E8 00 00 83 C4  ........j.......
0015C0  06 EB 3E 83 FF 03 7C 39-FF B6 20 FF FF B6 1E FF  ..>...|9.. .....
0015D0  6A 03 EB E6 90 83 FF 04-7C 27 FF B6 24 FF FF B6  j.......|'..$...
0015E0  22 FF 6A 04 EB D4 90 C7-46 FA 01 00 EB 13 90 B6  ".j.....F.......
0015F0  04 06 05 FE 04 0E 05 FA-05 A8 05 BE 05 D6 05 E8  ................
001600  05 6A 14 6A 14 9A 00 00-00 00 83 C4 04 83 7E FA  .j.j..........~.
001610  00 75 03 E9 48 FE 89 76-F4 8E 06 02 00 26 FF 36  .u..H..v.....&.6
001620  0A 00 26 FF 36 08 00 26-FF 36 06 00 26 FF 36 04  ..&.6..&.6..&.6.
001630  00 8E 06 04 00 26 FF 36-0A 00 26 FF 36 08 00 26  .....&.6..&.6..&
001640  FF 36 06 00 26 FF 36 04-00 26 FF 36 02 00 26 FF  .6..&.6..&.6..&.
001650  36 00 00 9A 00 00 00 00-83 C4 14 FF 36 4A 01 FF  6...........6J..
001660  36 48 01 9A 00 00 00 00-83 C4 04 FF 76 F8 FF 76  6H..........v..v
001670  F6 9A 00 00 00 00 83 C4-04 FF 76 F8 FF 76 F6 9A  ..........v..v..
001680  00 00 00 00 83 C4 04 8E-06 04 00 26 FF 36 0A 00  ...........&.6..
001690  26 FF 36 08 00 26 FF 36-06 00 26 FF 36 04 00 26  &.6..&.6..&.6..&
0016A0  FF 36 02 00 26 FF 36 00-00 9A 00 00 00 00 83 C4  .6..&.6.........
0016B0  0C 83 3E 60 01 00 75 07-6A 03 6A 01 EB 05 90 6A  ..>`..u.j.j....j
0016C0  03 6A 00 9A 00 00 00 00-83 C4 04 6A 00 6A 00 9A  .j.........j.j..
0016D0  00 00 00 00 83 C4 04 6A-01 0E E8 00 00 83 C4 02  .......j........
0016E0  1E 68 00 00 9A 00 00 00-00 83 C4 04 6A 00 6A 02  .h..........j.j.
0016F0  9A 00 00 00 00 83 C4 04-1E 68 DA 01 9A 00 00 00  .........h......
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001700   00 83 C4 04 1F 5E 5F C9-CB C8 50 00 00 1E B8 00   .....^_...P.....
001710   00 8E D8 9A 00 00 00 00-FF 76 08 FF 76 06 1E 68   .........v..v..h
001720   3F 03 8D 46 B0 16 50 9A-00 00 00 00 83 C4 0C 8D   ?..F..P.........
001730   46 B0 16 50 6A 00 9A 00-00 00 00 83 C4 06 B8 00   F..Pj...........
001740   04 BA 00 00 52 50 52 50-52 50 68 00 01 6A 00 6A   ....RPRPRPh..j.j
001750   00 6A 00 9A 00 00 00 00-83 C4 14 68 FF 00 9A 00   .j.........h....
001760   00 00 00 83 C4 02 6A 00-6A 03 9A 00 00 00 00 83   ......j.j.......
001770   C4 04 FF 36 4A 01 9A 00-00 00 00 83 C4 02 FF 36   ...6J..........6
001780   48 01 0D 9C 66 01 C7 AF-9D CF A6 56 47 C7 A3 9D   H...f......VG...
001790   CF 9A 56 26 CF 8E 56 56-CF 83 56 55 CB 71 54 05   ..V&..VV..VU.qT.
0017A0   C7 6E 54 05 CF 66 56 46-CF 57 56 08 C7 4F 9D CF   .nT..fVF.WV..O..
0017B0   43 56 2B CB 3E 9D CF 2C-56 10 C7 29 9D CF 20 56   CV+.>...V..)..  V
0017C0   26 CF 14 56 2C C7 11 9F-87 0A 56 2A CE FF 56 26   &..V.......V*..V&
0017D0   CE F3 56 51 C6 E2 9D CE-D9 56 4C C6 D6 56 48 C6   ..VQ.....VL..VH.
0017E0   D1 56 48 C6 CC 56 48 C6-C7 56 48 C6 C2 56 48 C6   .VH..VH..VH..VH.
0017F0   BD 56 48 C6 B8 9C CE AF-56 3F CE A1 56 2D CE 93   .VH.....V?..V-..
001800   56 43 C6 90 9D C6 8C 9D-CE 83 56 1F C6 80 56 48   VC.........V...VH
001810   C6 7B 56 48 C6 76 56 48-C6 71 56 48 C6 6C 56 48   .{VH.vVH.qVH.lVH
001820   C6 67 56 48 C6 62 9C C6-5E 56 38 C6 59 56 38 C6   .gVH.b..^V8.YV8.
001830   54 56 38 C6 4F 56 38 C6-4A 9C CE 35 56 4A C6 2E   TV8.OV8.J..5VJ..
001840   8E C6 2C 8E C6 2A 8E C6-28 8E C6 26 8E C6 24 8E   ..,..*..(..&..$.
001850   C6 22 8E C6 20 8E C6 1E-8E 85 EB 56 03 85 D3 56   ."..  ......V...V
001860   61 CD BA 56 0B C5 B7 9D-C5 B3 9D CD AA 56 34 CD   a..V.........V4.
001870   9E 56 33 CD 92 56 31 CD-82 56 31 CD 72 56 2F CD   .V3..V1..V1.rV/.
001880   64 56 2E CD 50 56 26 CD-44 56 2C C5 41 9F 85 3A   dV..PV&.DV,.A..:
001890   56 24 CD 2F 56 26 85 24-56 62 85 1C 56 06 85 0B   V$./V&.$Vb..V...
0018A0   56 03 84 E8 56 62 84 E1-56 61 C4 BD 5E CC A4 56   V...Vb..Va..^..V
0018B0   54 CC 98 56 12 C4 95 9D-D4 91 56 54 CB 8E 56 54   T..V.......VT..VT
0018C0   CC 7B 56 0F C4 78 9D CC-6B 56 0E C4 68 9D C4 5F   .{V..x..kV..h.._
0018D0   9D CC 59 56 4E CC 51 56-0B C4 4E 9D C4 4A 9D 84   ..YVN.QV..N..J..
0018E0   46 56 06 84 32 56 03 84-05 56 62 67 A0 E9 01 01   FV..2V...Vbg....
0018F0   95 07 9A 00 00 00 00 83-C4 02 6A 02 9A 00 00 00   ..........j.....
001900   00 83 C4 02 6A FF 9A 00-00 00 00 83 C4 02 9A 00   ....j...........
001910   00 00 00 9A 00 00 00 00-6A 00 9A 00 00 00 00 83   ........j.......
001920   C4 02 9A 00 00 00 00 FF-36 4A 01 FF 36 48 01 FF   ........6J..6H..
001930   76 08 FF 76 06 1E 68 77-03 8D 46 B0 16 50 9A 00   v..v..hw..F..P..
001940   00 00 00 83 C4 10 8D 46-B0 16 50 6A 00 9A 00 00   .......F..Pj....
001950   00 00 83 C4 06 6A 00 6A-02 9A 00 00 00 00 83 C4   .....j.j........
001960   04 B8 00 02 BA 00 00 52-50 52 50 52 50 68 00 01   .......RPRPRPh..
001970   6A 00 6A 00 6A 00 9A 00-00 00 00 83 C4 14 6A 00   j.j.j.........j.
001980   6A 03 6A 00 9A 00 00 00-00 83 C4 06 6A 00 6A 06   j.j.........j.j.
001990   9A 00 00 00 00 83 C4 04-6A 01 6A 02 6A FF 6A 00   ........j.j.j.j.
0019A0   9A 00 00 00 00 83 C4 08-6A 01 6A 02 6A FF 6A 00   ........j.j.j.j.
0019B0   9A 00 00 00 00 83 C4 08-83 3E 60 01 00 75 30 B8   .........>`..u0.
0019C0   00 04 BA 00 00 52 50 52-50 52 50 68 00 01 6A 00   .....RPRPRPh..j.
0019D0   6A 00 6A 00 9A 00 00 00-00 83 C4 14 6A 00 6A 01   j.j.........j.j.
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0019E0  6A 00 9A 00 00 00 00 83-C4 06 6A 01 EB 03 90 6A   j.........j....j
0019F0  00 6A 00 9A 00 00 00 00-83 C4 04 6A 01 0E E8 00   .j.........j....
001A00  00 83 C4 02 1E 68 00 00-1E 68 AF 03 1E 68 50 00   .....h...h...hP.
001A10  9A 00 00 00 00 83 C4 0C-1E 68 50 00 6A 01 9A 00   .........hP.j...
001A20  00 00 00 83 C4 06 1E 68-00 00 9A 00 00 00 00 83   .......h........
001A30  C4 04 6A 00 6A 02 9A 00-00 00 00 83 C4 04 B8 00   ..j.j...........
001A40  00 BA 00 00 52 50 9A 00-00 00 00 83 C4 04 9A 00   ....RP..........
001A50  00 00 00 1F C9 CB 90 C8-00 00 00 1E B8 00 00 8E   ................
001A60  D8 83 3E 5C 01 00 74 31-FF 76 06 FF 36 5A 01 FF   ..>\..t1.v..6Z..
001A70  36 58 01 FF 36 56 01 FF-36 54 01 FF 36 52 01 FF   6X..6V..6T..6R..
001A80  36 50 01 FF 36 4E 01 FF-36 4C 01 9A 00 00 00 00   6P..6N..6L......
001A90  52 50 1E 68 D2 03 EB 2F-90 FF 36 5A 01 FF 36 58   RP.h.../..6Z..6X
001AA0  01 FF 36 56 01 FF 36 54-01 FF 36 52 01 FF 36 50   ..6V..6T..6R..6P
001AB0  01 FF 76 06 FF 36 4E 01-FF 36 4C 01 9A 00 00 00   ..v..6N..6L.....
001AC0  00 52 50 1E 68 E0 03 1E-68 00 00 9A 00 00 00 00   .RP.h...h.......
001AD0  83 C4 1E 1F C9 CB 90 A7-9C E3 00 CD DA 56 08 C5   .............V..
001AE0  D7 9F C5 D3 9D CD CB 56-39 C5 C8 9D C5 C4 9D C5   .......V9.......
001AF0  BD 9D C5 B9 9D C5 B5 9D-C5 B1 9D C5 AD 9D C5 A9   ................
001B00  9D C5 A2 9D CD 9A 56 39-C5 97 9D C5 93 9D C5 8F   ......V9........
001B10  9D C5 8B 9D C5 87 9D C5-83 9D C5 7F 9D C5 7B 9D   ..............{.
001B20  C5 71 9D C9 6B 9D CD 5D-56 4E CD 55 56 19 C9 50   .q..k..]VN.UV..P
001B30  56 22 C5 4D 56 22 CD 45-56 26 CD 39 56 60 C5 36   V".MV".EV&.9V`.6
001B40  9F CD 2D 56 46 C5 28 9F-CD 1F 56 08 C5 1C 9F C5   ..-VF.(...V.....
001B50  18 9D C5 14 9F 85 0D 56-2A CD 02 56 26 CC F1 56   .......V*..V&..V
001B60  5C CC E3 56 55 C8 D1 54-05 C4 CE 54 05 C4 C8 9D   \..VU..T...T....
001B70  CC BF 56 31 CC AF 56 31-CC 9F 56 5D CC 93 56 5C   ..V1..V1..V]..V\
001B80  CC 85 56 55 C8 73 54 05-C4 70 54 05 CC 68 56 26   ..VU.sT..pT..hV&
001B90  CC 5C 56 46 CC 4D 56 08-C4 45 9D C4 3B 9D C4 37   .\VF.MV..E..;..7
001BA0  9D CC 31 56 2B CC 29 56-5A CC 22 56 54 CC 1D 56   ..1V+.)VZ."VT..V
001BB0  53 CC 15 56 5A CC 0B 56-58 CC 01 56 49 C5 A0 0A   S..VZ..VX..VI...
001BC0  00 03 06 00 00 00 00 00-00 00 4D 9C 0D 00 C8 04   ..........M.....
001BD0  56 04 C8 02 56 07 C8 00-56 0A E2 A0 60 03 01 7A   V...V...V...`..z
001BE0  09 C8 5A 00 00 57 56 1E-B8 00 00 8E D8 B8 00 00   ..Z..WV.........
001BF0  BA 00 00 52 50 9A 00 00-00 00 83 C4 04 FF 76 0A   ...RP.........v.
001C00  FF 76 08 1E 68 EE 03 8D-46 B0 16 50 9A 00 00 00   .v..h...F..P....
001C10  00 83 C4 0C B8 00 00 BA-00 00 52 50 8D 46 B0 16   ..........RP.F..
001C20  50 6A 01 6A 00 9A 00 00-00 00 83 C4 0C B8 00 00   Pj.j............
001C30  BA 00 00 52 50 1E 68 2A-04 6A 01 6A 01 9A 00 00   ...RP.h*.j.j....
001C40  00 00 83 C4 0C B8 00 00-BA 00 00 52 50 9A 00 00   ...........RP...
001C50  00 00 83 C4 04 B8 00 00-BA 00 00 52 50 1E 68 5B   ...........RP.h[
001C60  04 6A 02 6A 01 9A 00 00-00 00 83 C4 0C B8 00 00   .j.j............
001C70  BA 00 00 52 50 1E 68 70-04 6A 02 6A 02 9A 00 00   ...RP.hp.j.j....
001C80  00 00 83 C4 0C 6A 00 6A-02 9A 00 00 00 00 83 C4   .....j.j........
001C90  04 68 00 02 68 00 02 6A-00 6A 00 9A 00 00 00 00   .h..h..j.j......
001CA0  83 C4 08 6A 00 6A 01 9A-00 00 00 00 83 C4 04 6A   ...j.j.........j
001CB0  00 6A 01 9A 00 00 00 00-83 C4 04 B8 00 03 BA 00   .j..............
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001CC0  00 52 50 52 50 52 50 68-00 01 6A 00 6A 00 6A 00  .RPRPRPh..j.j.j.
001CD0  9A 00 00 00 00 83 C4 14-6A 00 9A 00 00 00 00 83  ........j.......
001CE0  C4 02 6A 00 6A 04 6A 04-6A 01 6A 07 9A 00 00 00  ..j.j.j.j.j.....
001CF0  00 83 C4 0A 6A 03 6A 00-9A 00 00 00 00 83 C4 04  ....j.j.........
001D00  6A 00 6A 00 9A 00 00 00-00 83 C4 04 6A 00 9A 00  j.j.........j...
001D10  00 00 00 83 C4 02 6A 03-6A 03 6A 02 6A 00 9A 00  ......j.j.j.j...
001D20  00 00 00 83 C4 08 2B F6-6A 02 9A 00 00 00 00 83  ......+.j.......
001D30  C4 02 8D 46 A8 16 50 8D-46 AC 16 50 8D 46 AE 16  ...F..P.F..P.F..
001D40  50 9A 00 00 00 00 83 C4-0C 8B F8 A8 02 74 03 BE  P............t..
001D50  01 00 0B F6 74 D2 89 7E-A6 89 76 AA FF 76 A8 9A  ....t..~..v..v..
001D60  00 00 00 00 83 C4 02 6A-00 6A 02 9A 00 00 00 00  .......j.j......
001D70  83 C4 04 8E 06 06 00 26-8B 1E 00 00 8A 87 40 01  .......&......@.
001D80  2A E4 50 8E 06 08 00 26-8B 1E 00 00 8A 87 40 01  *.P....&......@.
001D90  50 8E 06 0A 00 26 8B 1E-00 00 8A 87 40 01 50 6A  P....&......@.Pj
001DA0  01 9A 00 00 00 00 83 C4-08 6A 01 6A 02 6A FF 6A  .........j.j.j.j
001DB0  00 9A 00 00 00 00 83 C4-08 6A 01 6A 02 6A FF 6A  .........j.j.j.j
001DC0  00 9A 00 00 00 00 83 C4-08 B8 00 04 BA 00 00 52  ...............R
001DD0  50 52 50 52 50 68 00 01-6A 00 6A 00 6A 00 9A 00  PRPRPh..j.j.j...
001DE0  00 00 00 83 C4 14 68 FF-00 9A 00 00 00 00 83 C4  ......h.........
001DF0  02 9A 00 00 00 00 FF 36-4A 01 FF 36 48 01 FF 76  .......6J..6H..v
001E00  0A FF 76 08 1E 68 B8 04-8D 46 B0 16 50 9A 00 00  ..v..h...F..P...
001E10  00 00 83 C4 10 8D 46 B0-16 50 6A 00 9A 00 00 00  ......F..Pj.....
001E20  00 83 C4 06 6A 00 6A 06-9A 00 00 00 00 83 C4 04  ....j.j.........
001E30  6A 01 6A 02 6A FF 6A 00-9A 00 00 00 00 83 C4 08  j.j.j.j.........
001E40  6A 01 6A 02 6A FF 6A 00-9A 00 00 00 00 83 C4 08  j.j.j.j.........
001E50  9A 00 00 00 00 83 3E 60-01 00 75 2F B8 00 04 BA  ......>`..u/....
001E60  00 00 52 50 52 50 52 50-68 00 01 6A 00 6A 00 6A  ..RPRPRPh..j.j.j
001E70  00 9A 00 00 00 00 83 C4-14 6A 00 6A 01 6A 00 9A  .........j.j.j..
001E80  00 00 00 00 83 C4 06 6A-01 EB 02 6A 00 6A 00 9A  .......j...j.j..
001E90  00 00 00 00 83 C4 04 FF-76 06 0E E8 00 00 83 C4  ........v.......
001EA0  02 1E 68 00 00 1E 68 C0-04 1E 68 50 00 9A 00 00  ..h...h...hP....
001EB0  00 00 83 C4 0C 1E 68 50-00 6A 01 9A 00 00 00 00  ......hP.j......
001EC0  83 C4 06 1E 68 00 00 9A-00 00 00 00 83 C4 04 6A  ....h..........j
001ED0  00 6A 02 9A 00 00 00 00-83 C4 04 B8 00 00 BA 00  .j..............
001EE0  00 52 50 9A 00 00 00 00-83 C4 04 9A 00 00 00 00  .RP.............
001EF0  1F 5E 5F C9 CB C8 0C 00-00 57 56 1E B8 00 00 8E  .^_......WV.....
001F00  D8 2B FF B8 00 00 BA 00-00 52 50 9A 00 00 00 00  .+.......RP.....
001F10  83 C4 04 B8 00 00 BA 00-00 52 50 1E 68 E3 04 6A  .........RP.h..j
001F20  01 57 9A 00 00 00 00 83-C4 0C B8 00 00 BA 00 00  .W..............
001F30  52 50 9A 00 00 00 00 83-C4 04 B8 00 00 AA 9C 77  RP.............w
001F40  01 C7 5A 56 17 CF 52 56-19 CB 4D 56 17 C7 4A 56  ..ZV..RV..MV..JV
001F50  17 CF 42 56 41 C7 3C 9D-CB 36 56 22 C7 33 56 22  ..BVA.<..6V".3V"
001F60  CF 2B 56 19 CB 26 56 22-C7 23 56 22 CB 1C 9D CF  .+V..&V".#V"....
001F70  0B 56 4E CF 03 56 19 CA-FE 56 22 C6 FB 56 22 CE  .VN..V...V"..V".
001F80  F3 56 26 CE E7 56 60 C6-E4 9F CE DB 56 46 C6 D6  .V&..V`.....VF..
001F90  9F CE CD 56 08 C6 CA 9F-C6 C6 9D C6 C2 9F 86 BB  ...V............
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001FA0  56 2A CE AF 56 26 CE 9F-56 5C CE 91 56 55 CA 7F  V*..V&..V\..VU.
001FB0  54 05 C6 7C 54 05 C6 76-9D CE 70 56 54 CE 68 56  T..!T..v..pVT.hV
001FC0  31 CE 58 56 31 CE 48 56-5D CE 3C 56 46 CE 2D 56  1.XV1.HVJ.<VF.-V
001FD0  08 C6 25 9D C6 1B 9D C6-17 9D CE 11 56 2B CE 09  ..%.........V+..
001FE0  56 56 CD FE 56 55 C9 EC-54 05 C5 E9 54 05 CD E1  VV..VU..T...T...
001FF0  56 31 CD D1 56 31 CD C1-56 35 C5 BB 9D C5 B7 56  V1..V1..V5.....V
002000  04 C5 B2 9C C5 AD 9D C5-A9 56 07 C5 A4 9C C5 9D  .........V......
002010  9D C5 99 56 0A C5 94 9C-CD BB 56 26 CD 7F 56 52  ...V......V&.VR
002020  CD 61 56 32 CD 4A 56 30-CD 3E 56 28 CD 2E 56 25  .aV2.JV0.>V(..V%
002030  CD 24 56 21 CD 18 56 1E-CD 0C 56 1C CC FA 56 1A  .$V!..V...V...V.
002040  CC F0 56 55 C8 DE 54 05-C4 DB 54 05 CC D3 56 18  ..VU..T...T...V.
002050  CC C7 56 18 CC BB 56 16-CC A9 56 26 CC 9D 56 41  ..V...V...V&..VA
002060  C4 96 9D C8 90 56 17 C4-8D 56 17 CC 85 56 41 C4  .....V...V...VA.
002070  7E 9D C8 78 56 17 C4 75-56 17 CC 6D 56 19 C8 68  ~..xV..uV..mV..h
002080  56 17 C4 65 56 17 CC 5D-56 41 C4 56 9D C8 50 56  V..eV..JVA.V..PV
002090  22 C4 4D 56 22 CC 45 56-41 C8 37 56 22 C4 34 56  ".MV".EVA.7V".4V
0020A0  22 CC 2C 56 08 C4 24 9D-CC 15 56 19 C8 10 56 22  "..V..$...V...V"
0020B0  C4 0D 56 22 C8 08 9D 49-A0 CB 02 01 D6 0C BA 00  ..V"...I........
0020C0  00 52 50 1E 68 18 05 6A-02 6A 01 9A 00 00 00 00  .RP.h..j.j......
0020D0  83 C4 0C B8 00 00 BA 00-00 52 50 1E 68 31 05 6A  .........RP.h1.j
0020E0  02 6A 03 9A 00 00 00 00-83 C4 0C B8 00 00 BA 00  .j..............
0020F0  00 52 50 1E 68 4A 05 6A-02 6A 04 9A 00 00 00 00  .RP.hJ.j.j......
002100  83 C4 0C B8 00 00 BA 00-00 52 50 1E 68 62 05 6A  .........RP.hb.j
002110  02 6A 05 9A 00 00 00 00-83 C4 0C B8 00 00 BA 00  .j..............
002120  00 52 50 1E 68 7D 05 6A-02 6A 07 9A 00 00 00 00  .RP.h}.j.j......
002130  83 C4 0C B8 00 00 BA 00-00 52 50 1E 68 93 05 6A  .........RP.h..j
002140  02 6A 08 9A 00 00 00 00-83 C4 0C 2B F6 8D 46 F6  .j.........+..F.
002150  16 50 8D 46 FA 16 50 8D-46 FE 16 50 9A 00 00 00  .P.F..P.F..P....
002160  00 83 C4 0C 89 46 F4 FF-76 F6 9A 00 00 00 00 83  .....F..v.......
002170  C4 02 F6 46 F6 02 74 06-BE 01 00 E9 A9 00 83 7E  ...F..t........~
002180  FE 00 75 09 83 7E FA 00-75 03 E9 9A 00 F6 46 F6  ..u..~..u.....F.
002190  01 74 47 8E 06 04 00 26-A1 04 00 03 46 FE 3D 01  .tG....&....F.=.
0021A0  00 7D 03 B8 01 00 3D 2B-00 7E 03 B8 2B 00 8E 06  .}....=+.~..+...
0021B0  04 00 26 A3 04 00 26 A1-06 00 03 46 FA 3D 01 00  ..&...&....F.=..
0021C0  7D 03 B8 01 00 3D 3C 00-7E 03 B8 3C 00 8E 06 04  }....=<.~..<....
0021D0  00 26 A3 06 00 BF 01 00-EB 3A 8E 06 04 00 26 A1  .&.......:....&.
0021E0  00 00 03 46 FE 79 02 2B-C0 3D FF 01 7E 03 B8 FF  ...F.y.+.=..~...
0021F0  01 8E 06 04 00 26 A3 00-00 26 A1 02 00 03 46 FA  .....&...&....F.
002200  79 02 2B C0 3D DF 01 7E-03 B8 DF 01 8E 06 04 00  y.+.=..~........
002210  26 A3 02 00 6A 01 6A 02-B8 00 00 BA 00 00 52 50  &...j.j.......RP
002220  0E E8 00 00 83 C4 08 0B-F6 75 03 E9 1F FF 89 7E  .........u.....~
002230  FC 89 76 F8 9A 00 00 00-00 8E 06 02 00 26 C7 06  ..v..........&..
002240  00 00 00 00 26 C7 06 02-00 00 00 0B FF 74 3A 8E  ....&........t:.
002250  06 04 00 26 A1 04 00 99-2B C2 D1 F8 8E 06 02 00  ...&....+.......
002260  26 A3 04 00 8E 06 04 00-26 A1 06 00 99 2B C2 D1  &.......&....+..
002270  F8 8E 06 02 00 26 A3 06-00 26 A1 04 00 26 A3 08  .....&...&...&..
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002280  00 26 A1 06 00 26 A3 0A-00 B8 00 00 BA 00 00 52   .&...&.........R
002290  50 9A 00 00 00 00 83 C4-04 9A 00 00 00 00 1F 5E   P..............^
0022A0  5F C9 CB 90 C8 18 00 00-57 56 1E B8 00 00 8E D8   _.......WV......
0022B0  C7 46 F2 05 00 B8 00 00-BA 00 00 52 50 9A 00 00   .F.........RP...
0022C0  00 00 83 C4 04 B8 00 00-BA 00 00 52 50 1E 68 A7   ...........RP.h.
0022D0  05 6A 01 6A 00 9A 00 00-00 00 83 C4 0C B8 00 00   .j.j............
0022E0  BA 00 00 52 50 9A 00 00-00 00 83 C4 04 B8 00 00   ...RP...........
0022F0  BA 00 00 52 50 1E 68 F0-05 6A 02 6A 01 9A 00 00   ...RP.h..j.j....
002300  00 00 83 C4 0C B8 00 00-BA 00 00 52 50 1E 68 0B   ...........RP.h.
002310  06 6A 02 6A 03 9A 00 00-00 00 83 C4 0C B8 00 00   .j.j............
002320  BA 00 00 52 50 1E 68 24-06 6A 02 6A 04 9A 00 00   ...RP.h$.j.j....
002330  00 00 83 C4 0C B8 00 00-BA 00 00 52 50 1E 68 39   ...........RP.h9
002340  06 6A 02 6A 05 9A 00 00-00 00 83 C4 0C B8 00 00   .j.j............
002350  BA 00 00 52 50 1E 68 4B-06 6A 02 6A 07 9A 00 00   ...RP.hK.j.j....
002360  00 00 83 C4 0C B8 00 00-BA 00 00 52 50 1E 68 61   ...........RP.ha
002370  06 6A 02 6A 08 9A 00 00-00 00 83 C4 0C 8E 06 04   .j.j............
002380  00 26 A1 00 00 D4 9C 73-01 C6 C5 56 48 C6 C1 9C   .&.....s...VH...
002390  CE B8 56 41 C6 B1 9D CA-AB 56 17 C6 A8 56 17 CE   ..VA.....V...V..
0023A0  A0 56 41 C6 99 9D CA 93-56 17 C6 90 56 17 CE 88   .VA.....V...V...
0023B0  56 41 C6 81 9D CA 7B 56-17 C6 78 56 17 CE 70 56   VA....{V..xV..pV
0023C0  41 C6 69 9D CA 63 56 17-C6 60 56 17 CE 58 56 41   A.i..cV..`V..XVA
0023D0  C6 51 9D CA 4B 56 17 C6-48 56 17 CE 40 56 41 C6   .Q..KV..HV..@VA.
0023E0  39 9D CA 33 56 17 C6 30-56 17 CE 28 56 19 CA 23   9..3V..0V..(V..#
0023F0  56 17 C6 20 56 17 CE 18-56 41 C6 11 9D CA 0B 56   V.. V...VA.....V
002400  22 C6 08 56 22 CE 00 56-19 C9 FB 56 22 C5 F8 56   "..V"..V...V"..V
002410  22 C9 EE 9D CD DC 56 4E-CD D4 56 19 C9 CF 56 22   ".....VN..V...V"
002420  C5 CC 56 22 C5 C9 56 38-C5 C5 56 38 C5 C1 56 38   ..V"..V8..V8..V8
002430  C5 BD 56 38 C5 B9 56 38-C5 B5 9C C5 AC 56 48 C5   ..V8..V8.....VH.
002440  A8 9C C5 A4 56 38 C5 A0-9C C5 97 56 48 C5 93 9C   ....V8.....VH...
002450  C5 89 56 38 C5 82 56 38-C5 7D 9C CD 77 56 54 85   ..V8..V8.}..wVT.
002460  64 56 5F C9 5E 56 48 C5-5B 56 48 C5 54 56 48 C5   dV_.^VH.[VH.TVH.
002470  50 9C C5 3D 56 48 C5 39-56 48 C5 35 9C C5 22 56   P..=VH.9VH.5.."V
002480  48 C5 1E 9C C5 15 56 48-C5 11 9C C4 FA 56 48 C4   H.....VH.....VH.
002490  F6 56 48 C4 F2 9C C4 DB-56 48 C4 D7 9C CC AD 56   .VH.....VH.....V
0024A0  52 CC 9F 56 32 CC 86 56-41 C4 7F 9D C8 79 56 17   R..V2..VA...yV.
0024B0  C4 76 56 17 CC 6E 56 41-C4 67 9D C8 61 56 17 C4   .vV..nVA.g..aV..
0024C0  5E 56 17 CC 56 56 41 C4-4F 9D C8 49 56 17 C4 46   ^V..VVA.O..IV..F
0024D0  56 17 CC 3E 56 41 C4 37-9D C8 31 56 17 C4 2E 56   V..>VA.7..1V...V
0024E0  17 CC 26 56 41 C4 1F 9D-C8 19 56 17 C4 16 56 17   ..&VA.....V...V.
0024F0  CC 0E 56 41 C4 07 9D C8-01 56 17 F1 A0 0B 03 01   ..VA.....V......
002500  9D 0F 89 46 F0 26 A1 02-00 89 46 EE 26 A1 04 00   ...F.&....F.&...
002510  26 F7 2E 08 00 03 46 F0-89 46 EA 26 A1 06 00 26   &.....F..F.&...&
002520  F7 2E 0A 00 03 46 EE 89-46 E8 26 A1 04 00 99 2B   .....F..F.&....+
002530  C2 D1 F8 05 05 00 89 46-FA 26 A1 06 00 99 2B C2   .......F.&....+.
002540  D1 F8 05 05 00 89 46 F8-8E 06 02 00 8B 46 FA 26   .......F......F.&
002550  39 06 08 00 7E 04 26 A3-08 00 8B 46 F8 26 39 06   9...~.&....F.&9.
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002560  0A 00 7E 04 26 A3 0A 00-8B 46 F0 26 39 06 00 00   ..~.&....F.&9...
002570  7E 1E 8B 46 EA 26 39 06-00 00 7D 14 8B 46 EE 26   ~..F.&9...}..F.&
002580  39 06 02 00 7E 0A 8B 46-E8 26 39 06 02 00 7C 3E   9...~..F.&9...|>
002590  8E 06 04 00 26 A1 04 00-8B C8 D1 E0 D1 E0 03 C1   ....&...........
0025A0  8E 06 02 00 26 03 06 04-00 03 46 F0 26 A3 00 00   ....&.....F.&...
0025B0  8E 06 04 00 26 A1 06 00-8B C8 D1 E0 03 C1 8E 06   ....&...........
0025C0  02 00 26 03 06 06 00 03-46 EE 26 A3 02 00 6A 02   ..&.....F.&...j.
0025D0  6A 02 9A 00 00 00 00 83-C4 04 68 FF 01 68 FF 01   j.........h..h..
0025E0  6A 00 6A 00 9A 00 00 00-00 83 C4 08 68 FF 00 6A   j.j.........h..j
0025F0  00 6A 00 6A 02 9A 00 00-00 00 83 C4 08 68 FF 00   .j.j.........h..
002600  6A 00 6A 00 6A 03 9A 00-00 00 00 83 C4 08 6A 02   j.j.j.........j.
002610  6A 02 B8 00 00 BA 00 00-52 50 0E E8 00 00 83 C4   j.......RP......
002620  08 2B F6 8B 7E E8 8D 46-F4 16 50 8D 46 FC 16 50   .+..~..F..P.F..P
002630  8D 46 FE 16 50 9A 00 00-00 00 83 C4 0C 89 46 EC   .F..P.........F.
002640  FF 76 F4 9A 00 00 00 00-83 C4 02 F6 46 F4 02 74   .v..........F..t
002650  06 BE 01 00 E9 BF 00 83-7E FE 00 75 09 83 7E FC   ........~..u..~.
002660  00 75 03 E9 B0 00 6A 02-6A 02 B8 00 00 BA 00 00   .u....j.j.......
002670  52 50 0E E8 00 00 83 C4-08 F6 46 F4 01 74 44 8E   RP........F..tD.
002680  06 02 00 26 A1 08 00 2B-46 FE 3D 02 00 7D 03 B8   ...&...+F.=..}..
002690  02 00 3B 46 FA 7E 03 8B-46 FA 8E 06 02 00 26 A3   ..;F.~..F.....&.
0026A0  08 00 26 A1 0A 00 2B 46-FC 3D 02 00 7D 03 B8 02   ..&...+F.=..}...
0026B0  00 3B 46 F8 7E 03 8B 46-F8 8E 06 02 00 26 A3 0A   .;F.~..F.....&..
0026C0  00 EB 40 8E 06 02 00 26-A1 00 00 03 46 FE 3B 46   ..@....&....F.;F
0026D0  F0 7D 03 8B 46 F0 3B 46-EA 7E 03 8B 46 EA 8E 06   .}..F.;F.~..F...
0026E0  02 00 26 A3 00 00 26 A1-02 00 03 46 FC 3B 46 EE   ..&...&....F.;F.
0026F0  7D 03 8B 46 EE 3B C7 7E-02 8B C7 8E 06 02 00 26   }..F.;.~.......&
002700  A3 02 00 6A 02 6A 02 B8-00 00 BA 00 00 52 50 0E   ...j.j.......RP.
002710  E8 00 00 83 C4 08 0B F6-75 03 E9 09 FF 89 76 F6   ........u.....v.
002720  9A 00 00 00 00 6A 02 6A-02 B8 00 00 BA 00 00 52   .....j.j.......R
002730  50 0E E8 00 00 83 C4 08-6A 00 6A 00 6A 00 6A 02   P.......j.j.j.j.
002740  9A 00 00 00 00 83 C4 08-6A 00 6A 00 6A 00 6A 03   ........j.j.j.j.
002750  9A 00 00 00 00 83 C4 08-8E 06 02 00 26 A1 00 00   ............&...
002760  2B 46 F0 99 8E 06 04 00-26 F7 3E 04 00 8E 06 02   +F......&.>.....
002770  00 26 89 16 04 00 26 A1-02 00 2B 46 EE 99 8E 06   .&....&...+F....
002780  04 00 26 F7 3E 06 00 8E-06 02 00 26 89 16 06 00   ..&.>......&....
002790  B8 00 00 BA 00 00 52 50-9A 00 00 00 00 83 C4 04   ......RP........
0027A0  9A 00 00 00 00 1F 5E 5F-C9 CB 90 C8 00 00 00 1E   ......^_........
0027B0  B8 00 00 8E D8 FF 76 0C-9A 00 00 00 00 83 C4 02   ......v.........
0027C0  6A 02 9A 00 00 00 00 83-C4 02 C4 5E 06 26 FF 77   j..........^.&.w
0027D0  02 26 FF 37 9A 00 00 00-00 83 C4 04 C4 5E 06 26   .&.7.........^.&
0027E0  FF 77 0A 26 FF 77 08 9A-00 00 00 00 83 C4 04 C4   .w.&.w..........
0027F0  5E 06 26 8B 47 0A 48 50-26 8B 47 08 48 50 9A 00   ^.&.G.HP&.G.HP..
002800  00 00 00 83 C4 04 1F C9-CB 6F 9C 38 01 CE FD 56   .........o.8...V
002810  45 CE E6 56 45 CE D3 56-42 CE C1 56 40 CE B7 56   E..VE..VB..V@..V
002820  3E CA AF 9D CE 9F 56 4E-CE 97 56 19 CA 92 56 22   >.....VN..V...V"
002830  C6 8F 56 22 C6 8C 56 38-C6 87 9C C6 83 56 48 C6   ..V"..V8.....VH.
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002840   7E 9C C6 76 56 38 C6 72-56 38 C6 6D 9C C6 69 56   ~..vV8.rV8.m..iV
002850   48 C6 64 9C C6 5C 56 38-C6 58 9C CE 4F 56 35 CE   H.d..\V8.X..OV5.
002860   3F 56 35 86 31 56 24 CA-2B 56 38 C6 28 56 38 CE   ?V5.1V$.+V8.(V8.
002870   1F 56 54 86 0F 56 24 CA-09 56 38 C6 06 56 38 C5   .VT..V$..V8..V8.
002880   FF 56 38 C5 FB 9C C5 E6-56 38 C5 E2 56 38 C5 DE   .V8.....V8..V8..
002890   9C C5 C7 56 38 C5 C3 9C-C5 BD 56 38 C5 B9 9C C5   ...V8.....V8....
0028A0   A2 56 38 C5 9E 56 38 C5-9A 9C C5 83 56 38 C5 7F   .V8..V8.....V8.
0028B0   9C 85 72 56 24 C9 6C 56-38 C5 69 56 38 CD 42 56   ..rV$.lV8.iV8.BV
0028C0   52 CD 34 56 32 85 1A 56-24 C9 14 56 38 C5 11 56   R.4V2..V$..V8..V
0028D0   38 CD 05 56 35 CC F4 56-35 CC E3 56 20 CC D1 56   8..V5..V5..V ..V
0028E0   1D C4 CA 56 38 C4 C3 56-38 C4 BE 9C C4 B4 56 48   ...V8..V8.....VH
0028F0   C4 B0 9C C4 AC 56 38 C4-A5 56 38 C4 A0 9C C4 94   .....V8..V8.....
002900   56 48 C4 90 9C C4 8A 56-38 C4 80 56 38 C4 7a 56   VH.....V8..V8.zV
002910   38 C4 6C 56 38 C4 64 56-38 C4 5E 56 38 C4 5a 56   8.lV8.dV8.^V8.ZV
002920   38 C4 50 56 38 C4 48 9C-C4 39 56 48 C4 2A 56 48   8.PV8.H..9VH.*VH
002930   C4 20 56 48 C4 1B 56 48-C4 11 56 48 C4 0C 56 48   . VH..VH..VH..VH
002940   C4 05 56 48 0D A0 06 00-03 0C 00 00 00 4B 9C 05   ..VH.........K..
002950   00 C8 00 54 05 3E A0 B8-02 01 A4 12 C8 06 00 00   ...T.>..........
002960   57 56 1E B8 00 00 8E D8-68 00 03 68 00 D0 9A 00   WV......h..h....
002970   00 00 00 83 C4 04 6A 00-6A 01 9A 00 00 00 00 83   ......j.j.......
002980   C4 04 6A 01 6A 01 9A 00-00 00 00 83 C4 04 2B F6   ..j.j.........+.
002990   8B C6 8E 06 0C 00 26 88-84 00 00 B8 FF 00 2B C6   ......&.......+.
0029A0   8B F8 26 8A 84 00 00 26-88 85 00 04 8B C6 99 2B   ..&....&.......+
0029B0   C2 D1 F8 88 46 FA 26 88-84 00 01 26 88 85 00 03   ....F.&....&....
0029C0   2C 80 26 88 84 00 02 26-88 85 00 05 46 81 FE 00   ,.&....&....F...
0029D0   01 7C BD 89 76 FE 6A 00-6A 02 9A 00 00 00 00 83   .|..v.j.j.......
0029E0   C4 04 6A 01 6A 02 6A FF-6A 00 9A 00 00 00 00 83   ..j.j.j.j.......
0029F0   C4 08 6A 01 6A 02 6A FF-6A 00 9A 00 00 00 00 83   ..j.j.j.j.......
002A00   C4 08 68 FF 00 9A 00 00-00 00 83 C4 02 68 00 02   ..h..........h..
002A10   68 00 02 6A 00 6A 00 9A-00 00 00 00 83 C4 08 6A   h..j.j.........j
002A20   00 9A 00 00 00 00 83 C4-02 8E 06 06 00 26 8B 1E   .............&..
002A30   00 00 8A 87 40 01 2A E4-50 8E 06 08 00 26 8B 1E   ....@.*.P....&..
002A40   00 00 8A 87 40 01 50 8E-06 0A 00 26 8B 1E 00 00   ....@.P....&....
002A50   8A 87 40 01 50 6A 01 9A-00 00 00 00 83 C4 08 6A   ..@.Pj.........j
002A60   00 6A 04 9A 00 00 00 00-83 C4 04 6A 00 6A 04 9A   .j.........j.j..
002A70   00 00 00 00 83 C4 04 6A-00 6A 05 9A 00 00 00 00   .......j.j......
002A80   83 C4 04 6A 00 6A 05 9A-00 00 00 00 83 C4 04 8E   ...j.j..........
002A90   06 04 00 26 83 3E 00 00-00 75 07 26 C7 06 00 00   ...&.>...u.&....
002AA0   47 00 26 83 3E 02 00 00-75 07 26 C7 06 02 00 6D   G.&.>...u.&....m
002AB0   00 26 83 3E 04 00 00 75-07 26 C7 06 04 00 20 00   .&.>...u.&.... .
002AC0   26 83 3E 06 00 00 75 07-26 C7 06 06 00 26 00 26   &.>...u.&....&.&
002AD0   83 3E 08 00 00 75 07 26-C7 06 08 00 0C 00 26 83   .>...u.&......&.
002AE0   3E 0A 00 00 75 07 26 C7-06 0A 00 08 00 6A 01 6A   >...u.&......j.j
002AF0   02 B8 00 00 BA 00 00 52-50 0E E8 00 00 83 C4 08   .......RP.......
002B00   8E 06 02 00 26 C7 06 00-00 00 00 26 C7 06 02 00   ....&......&....
002B10   00 00 26 83 3E 04 00 00-75 15 8E 06 04 00 26 A1   ..&.>...u.....&.
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002B20  04 00 99 2B C2 D1 F8 8E-06 02 00 26 A3 04 00 26   ...+.......&...&
002B30  83 3E 06 00 00 75 15 8E-06 04 00 26 A1 06 00 99   .>...u.....&....
002B40  2B C2 D1 F8 8E 06 02 00-26 A3 06 00 26 83 3E 08   +.......&...&.>.
002B50  00 00 75 15 8E 06 04 00-26 A1 04 00 99 2B C2 D1   ..u.....&....+..
002B60  F8 8E 06 02 00 26 A3 08-00 26 83 3E 0A 00 00 75   .....&...&.>...u
002B70  15 8E 06 04 00 26 A1 06-00 99 2B C2 D1 F8 8E 06   .....&....+.....
002B80  02 00 26 A3 0A 00 1F 5E-5F C9 CB 90 C8 00 00 00   ..&....^_.......
002B90  1E B8 00 00 8E D8 FF 76-0A FF 76 0C 9A 00 00 00   .......v..v.....
002BA0  00 83 C4 04 C4 5E 06 26-FF 77 0A 26 FF 77 08 26   .....^.&.w.&.w.&
002BB0  FF 77 06 26 FF 77 04 26-FF 77 02 26 FF 37 FF 76   .w.&.w.&.w.&.7.v
002BC0  0A 6A 01 9A 00 00 00 00-83 C4 10 1F C9 CB C8 00   .j..............
002BD0  00 00 1E B8 00 00 8E D8-FF 76 0A FF 76 0C 9A 00   .........v..v...
002BE0  00 00 00 83 C4 04 C4 5E-06 26 FF 77 0A 26 FF 77   .......^.&.w.&.w
002BF0  08 26 FF 77 06 26 FF 77-04 26 FF 77 02 26 FF 37   .&.w.&.w.&.w.&.7
002C00  FF 76 0A 6A 00 9A 00 00-00 00 83 C4 10 1F C9 CB   .v.j............
002C10  D3 9C 21 01 CE AA 56 02-CE 83 56 1D CA 78 9D CE   ..!...V...V..x..
002C20  68 56 02 CE 41 56 1D CA-36 9D C6 28 56 38 C6 24   hV..AV..é..(V8.$
002C30  9C C6 1B 56 48 C6 17 9C-C6 10 56 38 C6 0E 56 38   ...VH.....V8..V8
002C40  C6 07 9C C5 FE 56 48 C5-FA 9C C5 F3 56 38 C5 EE   .....VH....V8..
002C50  56 38 C5 EA 9C C5 E1 56-48 C5 DD 9C C5 D6 56 38   V8.....VH.....V8
002C60  C5 D1 56 38 C5 CD 9C C5-C4 56 48 C5 C0 9C C5 B9   ..V8.....VH.....
002C70  56 38 C5 B2 56 38 C5 AB-56 38 C5 A6 9C 85 9F 56   V8..V8..V8.....V
002C80  59 C9 99 56 48 C5 96 56-48 C5 8D 56 48 C5 85 56   Y..VH..VH..VH..V
002C90  48 C5 7E 56 48 C5 76 56-48 C5 6F 56 48 C5 67 56   H.~VH.vVH.oVH.gV
002CA0  48 C5 60 56 48 C5 58 56-48 C5 51 56 48 C5 49 56   H.`VH.XVH.QVH.IV
002CB0  48 C5 42 56 48 C5 3A 56-48 C5 35 9C CD 2C 56 18   H.BVH.:VH.5...V.
002CC0  CD 20 56 18 CD 14 56 18-CD 08 56 18 CC FC 56 35   . V...V...V...V5
002CD0  C4 F6 9D C4 F2 56 04 C4-ED 9C C4 E8 9D C4 E4 56   .....V.........V
002CE0  07 C4 DF 9C C4 D8 9D C4-D4 56 0A C4 CF 9C CC C6   .........V......
002CF0  56 1A CC BC 56 16 CC AA-56 56 CC 9F 56 31 CC 8F   V...V...VV..V1..
002D00  56 31 CC 7F 56 26 C4 6E-54 05 C4 69 54 05 C4 62   V1.V&.nT..iT..b
002D10  54 05 C4 5D 54 05 C4 4E-54 05 C4 49 54 05 C4 3D   T..]T..NT..IT..=
002D20  54 05 C4 38 9C CC 2B 56-34 CC 1F 56 33 CC 13 56   T..8..+V4..V3..V
002D30  4D C8 08 9D B7 8A 02 00-00 74                     M........t
```


```
002D30  4D C8 08 9D B7 8A 02 00-00 74                     M........t
```

```
000000  80 0B 00 09 62 6B 72 6D-5F 39 37 2E 63 60 d8 07   ....bkrm_97.c`..
000010  00 00 00 4D 53 20 43 6E-88 09 00 00 9F 4C 4C 49   ...MS Cn.....LLI
000020  42 43 45 25 88 06 00 00-9D 32 6C 4F E8 88 06 00   BCE%.....210....
000030  00 A1 01 43 56 37 96 35-00 00 06 44 47 52 4F 55   ...CV7.5...DGROU
000040  50 0C 42 4B 52 4D 5F 39-37 5F 54 45 58 54 04 43   P.BKRM_97_TEXT.C
000050  4F 44 45 05 5F 44 41 54-41 04 44 41 54 41 05 43   ODE._DATA.DATA.C
000060  4F 4E 53 54 04 5F 42 53-53 03 42 53 53 36 98 07   ONST._BSS.BSS6..
000070  00 48 36 0B 03 04 01 D0-98 07 00 48 96 01 05 06   .H6.......H.....
000080  01 76 98 07 00 48 26 00-07 07 01 E4 98 C7 00 48   .v...H&........H
000090  00 00 08 09 01 07 9A 08-00 02 FF 03 FF 04 FF 02   ................
0000A0  56 9C 0D 00 00 03 01 02-02 01 03 04 40 01 45 01   V...........@.E.
0000B0  C0 8C 23 02 09 5F 5F 66-6C 74 75 73 65 64 00 06   ..#..__fltused..
0000C0  46 4A 53 52 51 51 00 06-46 49 53 52 51 51 00 06   FJSRQQ..FISRQQ..
0000D0  46 49 45 52 51 51 00 06-46 49 44 52 51 51 00 06   FIERQQ..FIDRQQ..
0000E0  46 49 57 52 51 51 00 0A-5F 5F 61 63 72 74 75 73   FIWRQQ..__acrtus
0000F0  65 64 00 07 5F 73 63 72-6F 6C 6C 00 13 5F 67 65   ed.._scroll.._ge
000100  74 5F 65 78 70 65 72 69-6D 65 6E 74 5F 6B 65 79   t_experiment_key
000110  00 0C 5F 69 6D 5F 73 6F-66 74 69 6E 69 74 00 0B   .._im_softinit..
000120  5F 69 6D 5F 61 76 65 72-61 67 65 00 08 5F 69 6D   _im_average.._im
000130  5F 73 79 6E 63 00 06 5F-66 72 61 6D 65 00 0E 5F   _sync.._frame.._
000140  63 6C 69 70 5F 73 75 62-74 72 61 63 74 00 11 5F   clip_subtract.._
000150  72 65 6D 6F 76 65 5F 62-61 72 5F 67 72 61 70 68   remove_bar_graph
000160  00 07 5F 65 72 72 6D 73-67 00 08 5F 62 6B 72 6D   .._errmsg.._bkrm
000170  5F 39 37 00 09 5F 69 6D-5F 76 69 64 65 6F 00 0B   _97.._im_video..
000180  5F 69 6D 5F 6F 75 74 6D-6F 64 65 00 13 5F 63 6C   _im_outmode.._cl
000190  65 61 72 5F 6D 65 73 73-61 67 65 5F 61 72 65 61   ear_message_area
0001A0  00 0B 5F 69 6D 5F 6F 75-74 70 61 74 68 00 0A 5F   .._im_outpath.._
0001B0  69 6D 5F 6F 70 6D 6F 64-65 00 15 5F 63 6C 6F 73   im_opmode.._clos
0001C0  65 5F 73 74 61 6E 64 61-72 64 73 5F 66 69 6C 65   e_standards_file
0001D0  00 0A 5F 69 6D 5F 63 70-75 77 69 6E 00 0E 5F 67   .._im_cpuwin.._g
0001E0  65 74 5F 73 74 61 6E 64-61 72 64 73 00 0B 5F 6D   et_standards.._m
0001F0  65 73 73 61 67 65 5F 6F-6E 00 0C 5F 64 72 61 77   essage_on.._draw
000200  5F 62 6F 72 64 65 72 00-09 5F 78 62 6B 72 6D 5F   _border.._xbkrm_
000210  39 37 00 0C 5F 73 65 74-5F 6D 65 73 73 61 67 65   97.._set_message
000220  00 0E 5F 69 6D 5F 69 6E-74 65 72 69 6D 61 67 65   .._im_interimage
000230  00 11 5F 73 65 74 5F 73-63 72 65 65 6E 5F 74 69   .._set_screen_ti
000240  74 6C 65 00 06 5F 5F 66-74 6F 6C 00 05 5F 7A 65   tle..__ftol.._ze
000250  72 6F 00 04 5F 6F 6E 65-00 04 5F 74 77 6F 00 06   ro.._one.._two..
000260  5F 74 68 72 65 65 00 0C-5F 6D 65 73 73 61 67 65   _three.._message
000270  5F 6F 66 66 00 04 5F 61-6C 6C 00 08 5F 73 70 72   _off.._all.._spr
000280  69 6E 74 66 00 0F 5F 64-72 61 77 5F 62 61 72 5F   intf.._draw_bar_
000290  67 72 61 70 68 00 05 5F-63 68 61 6E 00 08 5F 67   graph.._chan.._g
0002A0  72 5F 63 68 61 6E 00 0F-5F 73 65 74 5F 62 61 72   r_chan.._set_bar
0002B0  5F 73 6C 69 64 65 72 00-1C 5F 67 65 74 5F 73 74   _slider.._get_st
0002C0  61 6E 64 61 72 64 5F 67-72 69 64 5F 73 74 72 75   andard_grid_stru
0002D0  63 74 75 72 65 00 55 90-2E 00 00 01 0E 5F 63 6C   cture.U......_cl
```

MODULE 2

0002E0	69 70 5F 73 75 62 74 72-61 63 74 00 00 00 08 5F	ip_subtract...._
0002F0	62 6B 72 6D 5F 39 37 16-0B 00 09 5F 78 62 6B 72	bkrm_97...._xbkr
000300	6D 5F 39 37 DE 00 00 29-88 04 00 00 A2 01 D1 A0	m_97...)........
000310	53 01 02 07 00 42 69 6F-6C 6F 67 69 63 61 6C 20	S....Biological
000320	56 69 73 69 6F 6E 20 20-42 4B 52 4D 5F 39 37 20	Vision BKRM_97
000330	42 61 63 6B 67 72 6F 75-6E 64 20 52 65 6D 6F 76	Background Remov
000340	61 6C 00 43 61 6E 27 74-20 61 63 63 65 73 73 20	al.Can't access
000350	73 74 61 6E 64 61 72 64-73 20 69 6E 66 6F 72 6D	standards inform
000360	61 74 69 6F 6E 20 66 6F-72 20 6B 65 79 20 25 6C	ation for key %l
000370	64 00 55 73 69 6E 67 20-64 65 66 61 75 6C 74 20	d.Using default
000380	67 72 69 64 20 73 74 72-75 63 74 75 72 65 20 64	grid structure d
000390	61 74 61 00 55 73 69 6E-67 20 64 65 66 61 75 6C	ata.Using defaul
0003A0	74 20 67 72 69 64 20 73-74 72 75 63 74 75 72 65	t grid structure
0003B0	20 64 61 74 61 00 53 65-74 74 69 6E 67 20 75 70	data.Setting up
0003C0	20 66 6F 72 20 62 61 63-6B 67 72 6F 75 6E 64 20	for background
0003D0	72 65 6D 6F 76 61 6C 2E-2E 2E 00 52 61 64 69 75	removal....Radiu
0003E0	73 20 3D 20 25 64 20 58-69 6E 63 72 65 6D 65 6E	s = %d Xincremen
0003F0	74 20 3D 20 25 64 20 59-69 6E 63 72 65 6D 65 6E	t = %d Yincremen
000400	74 20 3D 20 25 64 00 52-65 6D 6F 76 69 6E 67 20	t = %d.Removing
000410	62 61 63 6B 67 72 6F 75-6E 64 2E 2E 2E 00 42 61	background....Ba
000420	63 6B 67 72 6F 75 6E 64-20 72 65 6D 6F 76 61 6C	ckground removal
000430	20 70 65 72 63 65 6E 74-20 63 6F 6D 70 6C 65 74	percent complet
000440	65 00 43 6C 65 61 6E 69-6E 67 20 75 70 20 62 61	e.Cleaning up ba
000450	63 6B 67 72 6F 75 6E 64-20 72 65 6D 6F 76 61 6C	ckground removal
000460	2E 2E 2E 00 49 A0 07 00-02 00 00 64 00 32 C1 A0	....I......d.2..
000470	07 00 02 04 00 96 B4 C8-41 A0 44 00 02 56 01 43	........A.D..V.C
000480	6F 70 79 72 69 67 68 74-20 28 63 29 20 31 39 38	opyright (c) 198
000490	39 2C 20 42 69 6F 6C 6F-67 69 63 61 6C 20 56 69	9, Biological Vi
0004A0	73 69 6F 6E 20 49 6E 63-2E 20 20 41 6C 6C 20 72	sion Inc. All r
0004B0	69 67 68 74 73 20 72 65-73 65 72 76 65 64 00 70	ights reserved.p
0004C0	A0 06 00 03 00 00 00 00-57 9C 05 00 C8 00 56 22	........W.....V"
0004D0	1F A0 E2 00 01 00 00 C8-18 00 00 57 56 1E B8 00	...........WV...
0004E0	00 8E D8 8E 06 00 00 26-FF 36 00 00 6A 01 9A 00	.......&.6..j...
0004F0	00 00 00 83 C4 04 6A 01-9A 00 00 00 00 83 C4 02	......j.........
000500	6A 00 6A 00 6A FF 6A 01-9A 00 00 00 00 83 C4 08	j.j.j.j.........
000510	6A 00 6A 00 6A FF 6A 01-9A 00 00 00 00 83 C4 08	j.j.j.j.........
000520	C7 46 FA 00 D0 6A 01 9A-00 00 00 00 83 C4 02 6A	.F...j.........j
000530	04 6A 00 9A 00 00 00 00-83 C4 04 2B F6 89 76 E8	.j.........+..v.
000540	8B C6 C1 F8 06 89 46 EE-50 9A 00 00 00 00 83 C4	......F.P.......
000550	02 8B 46 E8 89 46 F8 8B-56 FA 40 89 46 F2 89 56	..F..F..V.@.F..V
000560	F4 BF 00 02 89 7E EA C4-5E F8 26 8A 07 2A E4 89	.....~..^.&..*..
000570	46 FC C4 5E F2 26 8A 07-89 46 F6 2B 46 FC 8B C8	F..^.&...F.+F...
000580	0B C9 7D 02 2B C9 8B C1-26 88 07 83 46 F8 02 83	..}.+...&...F...
000590	46 F2 02 FF 4E EA 75 CF-89 4E F0 80 46 E9 04 46	F...N.u..N..F..F
0005A0	81 FE DF 01 7E 9A 6A 00-9A 00 00 00 00 83 C4 02	....~.j.........
0005B0	1F 5E 5F C9 CB 09 9C 2B-00 CC D2 56 13 CC 73 56	.^_.....+...V..sV

```
0005C0   18 CC 5D 56 16 CC 51 56-13 CC 42 56 15 CC 32 56   ..]V..QV..BV..2V
0005D0   15 CC 22 56 13 CC 18 56-12 C4 13 56 22 C4 0E 9C   .."V...V...V"...
0005E0   C8 08 9D BB A0 28 00 03-02 00 00 00 00 00 00 00   .....(..........
0005F0   00 00 00 00 00 00 00 40-00 00 00 00 00 00 E0 3F   .......@.......?
000600   00 00 00 00 00 00 08 40-00 00 00 00 00 00 8C 9C   .......@........
000610   19 00 C8 22 56 24 C8 20-56 26 C8 1E 56 23 C8 04   ..."V$. V&..V#..
000620   56 2A C8 02 56 29 C8 00-56 21 50 A0 B7 03 01 DE   V*..V)..V!P.....
000630   00 C8 AE 27 00 57 56 1E-B8 00 00 8E D8 8E 06 02   ...'.WV.........
000640   00 26 A1 00 00 8E 06 04-00 26 A3 00 00 8E 06 00   .&.........&....
000650   00 26 A1 00 00 8E 06 06-00 26 A3 00 00 1E 68 07   .&.........&...h.
000660   00 9A 00 00 00 00 83 C4-04 68 00 03 68 00 D0 9A   .........h..h...
000670   00 00 00 00 83 C4 04 8E-06 04 00 26 FF 36 00 00   ...........&.6..
000680   6A 02 9A 00 00 00 00 83-C4 04 8E 06 00 00 26 FF   j.............&.
000690   36 00 00 6A 00 9A 00 00-00 00 83 C4 04 8E 06 04   6..j............
0006A0   00 26 FF 36 00 00 8E 06-00 00 26 FF 36 00 00 9A   .&.6......&.6...
0006B0   00 00 00 00 83 C4 04 83-7E 0A 00 74 03 E9 B5 01   ........~..t....
0006C0   9A 00 00 00 00 89 86 70-D8 89 96 72 D8 0B D2 7D   .......p...r...}
0006D0   0A 2B C0 89 86 72 D8 89-86 70 D8 FF B6 72 D8 FF   .+...r...p...r..
0006E0   B6 70 D8 9A 00 00 00 00-83 C4 04 89 86 7A D8 89   .p...........z..
0006F0   96 7C D8 0B D0 75 1C FF-B6 72 D8 FF B6 70 D8 1E   .|...u...r...p..
000700   68 35 00 9A 00 00 00 00-83 C4 08 2B C0 1F 5E 5F   h5.........+..^_
000710   C9 CB 90 8D 46 FA 16 50-8D 86 92 D8 16 50 8D 86   ....F..P.....P..
000720   5E D8 16 50 8D 86 68 D8-16 50 8D 86 86 D8 16 50   ^..P..h..P.....P
000730   8D 86 90 D8 16 50 8D 86-84 D8 16 50 8D 86 8E D8   .....P.....P....
000740   16 50 8D 86 6E D8 16 50-8D 86 78 D8 16 50 9A 00   .P..n..P..x..P..
000750   00 00 00 83 C4 28 0B C0-75 1D 8B 86 7A D8 0B 86   .....(..u...z...
000760   7C D8 74 A7 FF B6 7C D8-FF B6 7A D8 9A 00 00 00   |.t...|...z.....
000770   00 83 C4 04 EB 95 90 83-BE 78 D8 00 75 47 83 BE   .........x..uG..
000780   6E D8 00 75 40 83 BE 8E-D8 00 75 39 83 BE 84 D8   n..u@.....u9....
000790   00 75 32 1E 68 64 00 6A-00 9A 00 00 00 00 83 C4   .u2.hd.j........
0007A0   06 C7 86 78 D8 05 00 C7-86 6E D8 05 00 C7 86 8E   ...x.....n......
0007B0   D8 2B 00 C7 86 84 D8 3C-00 C7 86 90 D8 0C 00 C7   .+.....<........
0007C0   86 86 D8 08 00 FF B6 7C-D8 FF B6 7A D8 9A 00 00   .......|...z....
0007D0   00 00 83 C4 04 83 BE 8E-D8 00 75 06 C7 86 8E D8   ..........u.....
0007E0   08 00 83 BE 84 D8 00 75-06 C7 86 84 D8 0A 00 83   .......u........
0007F0   BE 90 D8 00 75 06 C7 86-90 D8 0C 00 83 BE 86 D8   ....u...........
000800   00 75 06 C7 86 86 D8 08-00 83 BE 92 D8 00 75 13   .u............u.
000810   83 7E FA 00 75 0D 9B DF-86 8E D8 9B DF 86 84 D8   .~..u...........
000820   EB 0A 90 9B DF 86 92 D8-9B DF 46 FA 9B DE C1 9B   ..........F.....
000830   DC 36 08 00 9B D9 96 60-D8 9B DC 06 10 00 9B DC   .6.....`........
000840   0E 18 00 9A 00 00 00 00-89 86 88 D8 3D 31 00 7E   ............=1.~
000850   06 C7 86 88 D8 31 00 8B-86 88 D8 99 B9 04 00 F7   .....1..........
000860   F9 89 86 E8 D8 8B 86 88-D8 99 B9 03 00 F7 F9 89   ................
000870   86 E6 D8 EB 54 8B 46 0A-89 86 88 D8 8B 46 0C 89   ....T.F......F..
000880   86 E8 D8 8B 46 0E 89 86-E6 D8 83 BE 88 D8 31 7E   ....F.........1~
000890   06 C7 86 88 D8 31 00 1E-68 86 00 6A 00 9A 00 00   .....1..h..j....
```

```
0008A0   00 00 83 C4 06 C7 86 78-D8 05 00 C7 86 6E D8 05   ........x.....n..
0008B0   00 C7 86 8E D8 2B 00 C7-86 84 D8 3C 00 C7 86 90   .....+.....<....
0008C0   D8 0C 00 C7 86 86 D8 08-00 1E 68 A8 00 9A 00 00   ..........h.....
0008D0   00 00 83 C4 04 8E 06 02-00 8B 86 E6 D8 26 39 06   .............&9.
0008E0   00 00 75 08 8B 86 E8 D8-89 86 E6 D8 8B 86 88 D8   ..u.............
0008F0   8E 06 00 00 26 2B 06 00-00 89 86 64 D8 8B 86 88   ....&+.....d....
000900   D8 99 8E 06 20 00 26 F7-3E 00 00 26 A1 00 00 8B   .... .&.>..&....
000910   CA F7 AE 88 D8 2B C1 89-86 6A D8 8B 86 88 D8 99   .....+...j......
000920   26 F7 3E 00 00 89 46 FC-03 86 88 D8 89 46 FE FF   &.>...F......F..
000930   B6 E6 D8 FF B6 E8 D8 FF-B6 88 D8 1E 68 CD 00 8D   ............h...
000940   86 96 D8 16 50 9A 00 00-00 00 83 C4 0E 8D 86 96   ....P...........
000950   D8 16 50 6A 00 9A 00 00-00 00 83 C4 06 8B 86 78   ..Pj...........x
000960   D8 89 86 82 D8 8B 86 6E-D8 89 86 74 D8 8B 86 90   .......n...t....
000970   D8 F7 AE 8E D8 03 86 78-D8 89 86 76 D8 8B 86 86   .......x...v....
000980   D8 F7 AE 84 D8 03 86 6E-D8 89 86 6C D8 8E 06 20   .......n...l...
000990   00 8B 46 08 26 39 06 00-00 75 0A 8E 06 22 00 26   ..F.&9...u...".&
0009A0   A1 00 00 EB 08 8E 06 02-00 26 A1 00 00 89 86 94   .........&......
0009B0   D8 FF B6 6C D8 FF B6 76-D8 FF B6 74 D8 FF B6 82   ...l...v...t....
0009C0   D8 50 FF 76 06 9A 00 00-00 00 83 C4 0C 8E 06 04   .P.v............
0009D0   00 26 FF 36 00 00 6A 02-9A 00 00 00 00 83 C4 04   .&.6..j.........
0009E0   8E 06 04 00 49 9C 03 01-C7 B1 9C CF A8 56 16 C7   ....I........V..
0009F0   A3 56 29 C7 9E 9C CF 95-56 1B C7 7A 56 21 C7 76   .V)......V..zV!.v
000A00   9C C7 70 56 26 C7 6C 9C-C7 66 56 23 C7 5E 9C CF   ..pV&.l..fV#.^..
000A10   25 56 1D CF 15 56 27 C7-0C 9D C6 F2 56 23 C6 DC   %V...V'......V#..
000A20   56 23 C6 D8 56 23 C6 D3-9C C6 C6 56 22 C6 C1 9C   V#..V#.....V"...
000A30   C6 AF 56 21 C6 A6 9C CE-9D 56 1A C6 9A 9D CE 6D   ..V!......V.....m
000A40   56 1D C6 68 9D CE 13 56-20 C6 10 9C C6 0D 56 05   V..h...V .....V.
000A50   C6 0B 9C C6 08 56 05 C6-03 56 05 C6 01 9C C5 FE   .....V...V......
000A60   56 05 C5 FB 56 05 C5 F7-56 05 C5 F2 56 05 C5 EA   V...V...V...V...
000A70   56 05 C5 E5 56 05 CD 9D-56 17 CD 69 56 1D C5 64   V...V...V..iV..d
000A80   9D CD 3C 56 17 CD 1E 56-2C CC D3 56 10 C4 D0 9D   ..<V...V,..V....
000A90   CC B3 56 19 CC 90 56 09-CC 7F 56 0C C4 7C 56 22   ..V...V..V..|V"
000AA0   C4 77 9C C4 73 56 29 C4-6E 9C CC 65 56 12 C4 60   .w..sV).n..eV..`
000AB0   56 22 C4 5B 9C CC 52 56-16 C4 4D 56 29 C4 48 9C   V".[..RV..MV).H.
000AC0   CC 3F 56 0A CC 31 56 1F-C4 2E 9D C4 2A 56 2A C4   .?V..1V.....*V*.
000AD0   26 9C C4 22 56 22 C4 1E-9C C4 1A 56 29 C4 16 9C   &.."V".....V)...
000AE0   C4 12 56 21 C4 0E 9C C8-08 9D BE A0 B4 03 01 91   ..V!............
000AF0   04 26 FF 36 00 00 6A 02-9A 00 00 00 00 83 C4 04   .&.6..j.........
000B00   6A 01 9A 00 00 00 00 83-C4 02 6A 08 8E 06 02 00   j.........j.....
000B10   26 FF 36 00 00 FF 76 06-FF 76 06 9A 00 00 00 00   &.6...v..v......
000B20   83 C4 08 6A 08 8E 06 02-00 26 FF 36 00 00 FF 76   ...j.....&.6...v
000B30   06 FF 76 06 9A 00 00 00-00 83 C4 08 6A 01 9A 00   ..v.........j...
000B40   00 00 00 83 C4 02 6A 08-8E 06 24 00 26 FF 36 00   ......j...$.&.6.
000B50   00 8E 06 02 00 26 FF 36-00 00 26 FF 36 00 00 9A   .....&.6..&.6...
000B60   00 00 00 00 83 C4 08 6A-08 8E 06 24 00 26 FF 36   .......j...$.&.6
000B70   00 00 8E 06 02 00 26 FF-36 00 00 26 FF 36 00 00   ......&.6..&.6..
```

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000B80   9A 00 00 00 00 83 C4 08-8E 06 02 00 26 A1 00 00   .............&...
000B90   89 86 8C D8 3D 63 00 7F-54 6B C0 64 8B F8 B8 64   ....=c.Tk.d...d
000BA0   00 2B 86 8C D8 89 86 56-D8 01 86 8C D8 8E 06 02   .+.....V........
000BB0   00 26 8B 36 00 00 83 FE-63 7F 25 B8 64 00 2B C6   .&.6....c%.d.+.
000BC0   89 86 58 D8 8B DF 03 DE-03 DD 26 A0 00 00 8B 8E   ..X.......&.....
000BD0   58 D8 57 8D BF EA D8 16-07 F2 AA 5F 03 B6 58 D8   X.W........_..X.
000BE0   83 C7 64 81 FF AC 26 7E-C4 89 B6 66 D8 8B 46 FC   ..d...&^...f..F.
000BF0   89 86 8C D8 8B 46 FE 39-86 8C D8 7D 5C 6B 46 FC   .....F.9...}\kF.
000C00   64 89 86 56 D8 8B 46 FE-2B 46 FC 89 86 5A D8 01   d..V..F.+F...Z..
000C10   86 8C D8 8B BE 58 D8 8E-06 02 00 26 8B 36 00 00   ......X.....&.6..
000C20   3B B6 6A D8 7D 24 8B BE-6A D8 2B FE 8B 9E 56 D8   ;.j.}$..j.+...V.
000C30   03 DE 03 DD 8E 06 00 00-26 A0 00 00 8B CF 57 8D   ........&.....W.
000C40   BF EA D8 16 07 F2 AA 5F-03 F7 83 86 56 D8 64 FF   ......._....V.d.
000C50   8E 5A D8 75 C2 89 B6 66-D8 8B 86 6A D8 8E 06 00   .Z.u...f...j....
000C60   00 26 2B 06 00 00 89 86-8A D8 26 A1 00 00 03 46   .&+.......&....F
000C70   FC 89 86 7E D8 8E 06 02-00 26 A1 00 00 89 86 80   ...~.....&......
000C80   D8 8B 46 FC 39 86 80 D8-7D 7D 6B 86 80 D8 64 89   ..F.9...}}k...d.
000C90   86 56 D8 6B 86 8A D8 64-89 86 58 D8 8B 46 FC 2B   .V.k...d..X..F.+
000CA0   86 80 D8 89 86 5A D8 01-86 80 D8 F7 D8 01 86 8A   .....Z..........
000CB0   D8 8B 76 FE 8B 8E 7E D8-8E 06 00 00 26 2B 0E 00   ..v...~.....&+..
000CC0   00 3B CE 7D 26 26 8B 3E-00 00 8B 9E 56 D8 03 D9   .;.}&&.>....V...
000CD0   03 DD 8B C7 36 88 87 EA-D8 8B 9E 58 D8 03 D9 03   ....6......X....
000CE0   DD 36 88 87 EA D8 41 3B-CE 7C DF 83 AE 58 D8 64   .6....A;.|...X.d
000CF0   FF 8E 7E D8 46 83 86 56-D8 64 FF 8E 5A D8 75 B4   ..~.F..V.d..Z.u.
000D00   89 76 FE 89 8E 66 D8 9A-00 00 00 00 1E 68 F9 00   .v...f.......h..
000D10   6A 01 9A 00 00 00 00 83-C4 06 1E 68 10 01 6A 05   j...........h..j.
000D20   6A 0A 9A 00 00 00 00 83-C4 08 8E 06 02 00 26 A1   j.............&.
000D30   00 00 89 86 8A D8 8B 86-6A D8 39 86 8A D8 7C 03   ........j.9...|.
000D40   E9 67 01 8B 86 64 D8 F7-D8 89 86 54 D8 6B 86 8A   .g...d.....T.k..
000D50   D8 64 89 86 5A D8 6B 86-E8 D8 64 89 86 52 D8 6A   .d..Z.k...d..R.j
000D60   00 FF B6 6A D8 FF B6 8A-D8 9A 00 00 00 00 83 C4   ...j............
000D70   06 8E 06 02 00 26 8B 36-00 00 3B B6 6A D8 7C 03   .....&.6..;.j.|.
000D80   E9 06 01 8B 86 54 D8 89-86 56 D8 8B 86 64 D8 2B   .....T...V...d.+
000D90   86 8A D8 89 86 58 D8 8B-7E 08 8B 9E 5A D8 03 DE   .....X..~...Z...
000DA0   03 DD 36 80 BF EA D8 00-75 03 E9 CF 00 8B 86 58   ..6.....u.......X
000DB0   D8 89 86 66 D8 8B 86 56-D8 03 C6 89 86 8C D8 50   ...f...V.......P
000DC0   FF B6 66 D8 8E 06 00 00-26 FF 36 00 00 8E 06 24   ..f.....&.6....$
000DD0   00 26 FF 36 00 00 9A 00-00 00 00 83 C4 08 6A 01   .&.6..........j.
000DE0   9A 00 00 00 00 83 C4 02-57 8E 06 20 00 26 FF 36   ........W.. .&.6
000DF0   00 00 8E 06 00 00 26 FF-36 00 00 8E 06 02 00 26   ......&.6......&
000E00   FF 36 00 00 9A 00 00 00-00 83 C4 08 57 8E 06 20   .6..........W..
000E10   00 26 FF 36 00 00 8E 06-00 00 26 FF 36 00 00 8E   .&.6......&.6...
000E20   06 02 00 26 FF 36 00 00-9A 00 00 00 00 83 C4 08   ...&.6..........
000E30   6A 01 9A 00 00 00 00 83-C4 02 6A 08 8E 06 04 00   j.........j.....
000E40   26 FF 36 00 00 8E 06 20-00 26 FF 36 00 00 26 FF   &.6.... .&.6..&.
000E50   36 00 00 9A 00 00 00 00-83 C4 08 6A 08 8E 06 04   6..........j....
```

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000E60   00 26 FF 36 00 00 8E 06-20 00 26 FF 36 00 00 26   .&.6.... .&.6..&
000E70   FF 36 00 00 9A 00 00 00-00 83 C4 08 03 B6 E6 D8   .6..............
000E80   39 B6 6A D8 7E 03 E9 11-FF 8B 86 52 D8 01 86 5A   9.j.~......R...Z
000E90   D8 8B 86 E8 D8 01 86 8A-D8 8B 86 6A D8 39 86 8A   ...........j.9..
000EA0   D8 1C 9C 2C 01 CF 84 56-1E C7 81 56 23 C7 7C 56   ...,...V...V#.|V
000EB0   23 C7 77 9C C7 73 56 29-C7 6E 9C CF 63 56 1E C7   #.w..sV).n..cV..
000EC0   60 56 23 C7 5B 56 23 C7-56 9C C7 52 56 29 C7 4D   `V#.[V#.V..RV).M
000ED0   9C CF 42 56 13 CF 38 56-1E C7 35 56 21 C7 30 9C   ..BV..8V..5V!.0.
000EE0   C7 2C 56 22 C7 27 9C C7-23 56 23 C7 1E 9C CF 14   .,V".'..#V#.....
000EF0   56 1E C7 11 56 21 C7 0C-9C C7 08 56 22 C7 03 9C   V...V!.....V"...
000F00   C6 FF 56 23 C6 FA 9C CE-F0 56 13 CE E6 56 08 C6   ..V#.....V...V..
000F10   E3 56 24 C6 DE 9C C6 DA-56 22 C6 D5 9C C6 87 56   .V$.....V".....V
000F20   21 C6 82 9C CE 79 56 2B-C6 3F 56 21 C6 3B 9C CE   !....yV+.?V!.;..
000F30   32 56 28 C6 2B 9D CE 22-56 1D C6 1D 9D CE 17 56   2V(.+.."V......V
000F40   25 C5 D7 56 22 C5 CE 56-22 C5 C9 9C C5 8A 56 21   %..V"..V".....V!
000F50   C5 86 9C C5 7B 56 22 C5-73 56 22 C5 6E 9C C5 49   ....{V".sV".n..I
000F60   56 22 C5 45 9C C5 2D 56-21 C5 28 9C C4 DB 56 21   V".E..-V!.(...V!
000F70   C4 C3 56 21 C4 BE 9C C4-9D 56 21 C4 99 9C CC 90   ..V!.....V!.....
000F80   56 1E C4 8D 56 21 C4 88-56 21 C4 83 9C C4 7F 56   V...V!..V!.....V
000F90   24 C4 7A 9C CC 6F 56 1E-C4 6C 56 21 C4 67 56 21   $.z..oV..lV!.gV!
000FA0   C4 62 9C C4 5E 56 24 C4-59 9C CC 4E 56 13 CC 44   .b..^V$.Y..NV..D
000FB0   56 1E C4 3B 56 21 C4 36-9C CC 2B 56 1E C4 22 56   V..;V!.6..+V.."V
000FC0   21 C4 1D 9C CC 12 56 13-CC 08 56 16 C4 03 56 29   !.....V...V...V)
000FD0   63 A0 7F 02 01 41 08 7D-03 E9 B9 FE 89 B6 7E D8   c...A.}.......~.
000FE0   6A 00 FF B6 6A D8 FF B6-6A D8 9A 00 00 00 00 83   j...j...j.......
000FF0   C4 06 1E 68 34 01 6A 01-9A 00 00 00 00 83 C4 06   ...h4.j.........
001000   6A 00 8E 06 06 00 26 FF-36 00 00 6A FF 8E 06 04   j.....&.6..j....
001010   00 26 FF 36 00 00 9A 00-00 00 00 83 C4 08 6A 00   .&.6..........j.
001020   8E 06 06 00 26 FF 36 00-00 6A FF 8E 06 04 00 26   ....&.6..j.....&
001030   FF 36 00 00 9A 00 00 00-00 83 C4 08 6A 01 9A 00   .6..........j...
001040   00 00 00 83 C4 02 6A 08-8E 06 00 00 26 FF 36 00   ......j.....&.6.
001050   00 8E 06 24 00 26 FF 36-00 00 26 FF 36 00 00 9A   ...$.&.6..&.6...
001060   00 00 00 00 83 C4 08 6A-08 8E 06 00 00 26 FF 36   .......j.....&.6
001070   00 00 8E 06 24 00 26 FF-36 00 00 26 FF 36 00 00   ....$.&.6..&.6..
001080   9A 00 00 00 00 83 C4 08-6A 01 9A 00 00 00 00 83   ........j.......
001090   C4 02 C7 86 7E D8 05 00-8E 05 00 6A 05 6A 00 9A   ....~......j.j..
0010A0   00 00 00 00 83 C4 04 6A-08 8E 06 02 00 26 FF 36   .......j.....&.6
0010B0   00 00 8E 06 20 00 26 FF-36 00 00 26 FF 36 00 00   .... .&.6..&.6..
0010C0   9A 00 00 00 00 83 C4 08-6A 08 8E 06 02 00 26 FF   ........j.....&.
0010D0   36 00 00 8E 06 20 00 26-FF 36 00 00 26 FF 36 00   6.... .&.6..&.6.
0010E0   00 9A 00 00 00 00 83 C4-08 4E 75 AF 6A 08 8E 06   .........Nu.j...
0010F0   20 00 26 FF 36 00 00 8E-06 00 00 26 FF 36 00 00    .&.6......&.6..
001100   26 FF 36 00 00 9A 00 00-00 00 83 C4 08 6A 08 8E   &.6..........j..
001110   06 20 00 26 FF 36 00 00-8E 06 00 00 26 FF 36 00   . .&.6......&.6.
001120   00 26 FF 36 00 00 9A 00-00 00 00 83 C4 08 68 FF   .&.6..........h.
001130   00 6A 00 9A 00 00 00 00-83 C4 04 68 FF 00 6A 01   .j.........h..j.
```

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001140  9A 00 00 00 00 83 C4 04-0E E8 00 00 6A 06-8E 06   ............j...
001150  24 00 26 FF 36 00 00 8E-06 02 00 26 FF 36 00 00   $.&.6......&.6..
001160  26 FF 36 00 00 9A 00 00-00 00 83 C4 08 6A 08 8E   &.6.........j..
001170  06 24 00 26 FF 36 00 00-8E 06 02 00 26 FF 36 00   .$.&.6......&.6.
001180  00 26 FF 36 00 00 9A 00-00 00 00 83 C4 08 6A 08   .&.6.........j.
001190  8E 06 02 00 26 FF 36 00-00 8E 06 00 00 26 FF 36   ....&.6......&.6
0011A0  00 00 26 FF 36 00 00 9A-00 00 00 00 83 C4 08 6A   ..&.6..........j
0011B0  08 8E 06 02 00 26 FF 36-00 00 8E 06 00 00 26 FF   .....&.6......&.
0011C0  36 00 00 26 FF 36 00 00-9A 00 00 00 00 83 C4 08   6..&.6..........
0011D0  6A 08 8E 06 00 00 26 FF-36 00 00 8E 06 20 00 26   j.....&.6.... .&
0011E0  FF 36 00 00 26 FF 36 00-00 9A 00 00 00 00 83 C4   .6..&.6.........
0011F0  08 6A 08 8E 06 00 00 26-FF 36 00 00 8E 06 20 00   .j.....&.6.... .
001200  26 FF 36 00 00 26 FF 36-00 00 9A 00 00 00 00 83   &.6..&.6........
001210  C4 08 8E 06 20 00 8B 46-08 26 39 06 00 00 75 0C   .... ..F.&9...u.
001220  8E 06 02 00 26 A1 00 00-EB 0A 90 90 8E 06 22 00   ....&.........".
001230  26 A1 00 00 89 86 94 D8-FF B6 6C D8 FF B6 76 D8   &.........l...v.
001240  FF B6 74 D8 FF B6 82 D8-50 8E 06 20 00 26 FF 36   ..t.....P.. .&.6
001250  00 00 1E 9C 6C 01 C6 79-56 23 C6 74 9C C6 5B 56   ....l..yV#.t..[V
001260  26 C6 57 9C C6 4F 56 21-C6 4B 9C C6 45 56 23 C6   &.W..OV!.K..EV#.
001270  3D 9C CE 34 56 1E C6 31-56 23 C6 2C 56 23 C6 27   =..4V..1V#..V#.
001280  9C C6 23 56 22 C6 1E 9C-CE 13 56 1E C6 10 56 23   ..#V".....V...V#
001290  C6 0B 56 23 C6 06 9C C6-02 56 22 C5 FD 9C CD F2   ..V#.....V".....
0012A0  56 1E C5 EF 56 22 C5 EA-56 22 C5 E5 9C C5 E1 56   V...V"..V".....V
0012B0  21 C5 DC 9C CD D1 56 1E-C5 CE 56 22 C5 C9 56 22   !.....V...V"..V"
0012C0  C5 C4 9C C5 C0 56 21 C5-BB 9C CD B0 56 1E C5 AD   .....V!.....V...
0012D0  56 21 C5 A8 56 21 C5 A3-9C C5 9F 56 24 C5 9A 9C   V!..V!.....V$...
0012E0  CD 8F 56 1E C5 8C 56 21-C5 87 56 21 C5 82 9C C5   ..V...V!..V!....
0012F0  7E 56 24 C5 79 9C 85 73-56 0E CD 6A 56 0D CD 5D   ~V$.y..sV..jV..]
001300  56 0D CD 50 56 1E C5 4D-56 22 C5 48 56 22 C5 43   V..PV..MV".HV".C
001310  9C C5 3F 56 23 C5 3A 9C-CD 2F 56 1E C5 2C 56 22   ..?V#.:../V..,V"
001320  C5 27 56 22 C5 22 9C C5-1E 56 23 C5 19 9C CD 0B   .'V"."...V#.....
001330  56 1E C5 08 56 23 C5 03-56 23 C4 FE 9C C4 FA 56   V...V#..V#.....V
001340  21 C4 F5 9C CC EA 56 1E-C4 E7 56 23 C4 E2 56 23   !.....V...V#..V#
001350  C4 DD 9C C4 D9 56 21 C4-D4 9C CC C9 56 0B CC B4   .....V!.....V...
001360  56 13 CC AA 56 1E C4 A7-56 24 C4 A2 56 24 C4 9D   V...V...V$..V$..
001370  9C C4 99 56 22 C4 94 9C-CC 89 56 1E C4 86 56 24   ...V".....V...V$
001380  C4 81 56 24 C4 7C 9C C4-78 56 22 C4 73 9C CC 68   ..V$.|..xV".s..h
001390  56 13 CC 5E 56 15 C4 5B-56 29 C4 56 9C C4 50 56   V..^V..[V).V..PV
0013A0  2A C4 4B 9C CC 40 56 15-C4 3D 56 29 C4 38 9C C4   *.K..@V..=V).8..
0013B0  32 56 2A C4 2D 9C CC 22-56 1D C4 1D 9D CC 14 56   2V*.-.."V......V
0013C0  2B 56 A0 7E 00 01 BC 0A-9A 00 00 00 00 83 C4 0C   +V.~............
0013D0  6A 03 6A 02 9A 00 00 00-00 83 C4 04 8E 06 00 00   j.j.............
0013E0  26 FF 36 00 00 6A 01 9A-00 00 00 00 83 C4 04 6A   &.6..j.........j
0013F0  00 6A 03 6A FF 6A 02 9A-00 00 00 00 83 C4 08 6A   .j.j.j.........j
001400  00 6A 03 6A FF 6A 02 9A-00 00 00 00 83 C4 08 9A   .j.j.j..........
001410  00 00 00 00 9A 00 00 00-00 B8 01 00 1F 5E 5F C9   .............^_.
```

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001420  CB 90 C8 00 00 00 1E B8-00 00 8E D8 6A 00 6A 00   ............j.j.
001430  6A 00 FF 76 08 FF 76 06-0E E8 00 00 83 C4 0A 1F   j..v..v.........
001440  C9 CB E6 9C 2B 00 84 72-56 1C C8 60 9D CC 4D 56   ....+..rV..`..MV
001450  14 CC 48 56 0F CC 40 56-15 CC 30 56 15 CC 20 56   ..HV..@V..0V.. V
001460  12 C4 1B 56 22 C4 16 9C-CC 0D 56 16 CC 01 56 1B   ...V"....V...V.
001470  8E 8A 02 00 00 74                                  .....t
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001470  8E 8A 02 00 00 74                                  .....t
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000000  80 0B 00 09 71 75 61 64-5F 39 37 2E 63 61 88 07  ....quad_97.ca..
000010  00 00 00 4D 53 20 43 6E-88 09 00 00 9F 4C 4C 49  ...MS Cn.....LLI
000020  42 43 45 25 88 06 00 00-9D 32 6C 4F E8 88 06 00  BCE%.....2lO....
000030  00 A1 01 43 56 37 96 35-00 00 06 44 47 52 4F 55  ...CV7.5...DGROU
000040  50 0C 51 55 41 44 5F 39-37 5F 54 45 58 54 04 43  P.QUAD_97_TEXT.C
000050  4F 44 45 05 5F 44 41 54-41 04 44 41 54 41 05 43  ODE._DATA.DATA.C
000060  4F 4E 53 54 04 5F 42 53-53 03 42 53 53 37 98 07  ONST._BSS.BSS7..
000070  00 48 B8 23 03 04 01 36-98 07 00 48 9A 0A 05 06  .H.#...6...H....
000080  01 69 98 07 00 48 2E 00-07 07 01 DC 98 07 00 48  .i...H.........H
000090  1E 00 08 09 01 E9 9A 08-00 02 FF 03 FF 04 FF 02  ................
0000A0  56 9C 0D 00 00 03 01 02-02 01 03 04 40 01 45 01  V...........@.E.
0000B0  C0 8C A8 00 09 5F 5F 66-6C 74 75 73 65 64 00 06  .....__fltused..
0000C0  46 4A 53 52 51 51 00 06-46 49 53 52 51 51 00 06  FJSRQQ..FISRQQ..
0000D0  46 49 45 52 51 51 00 06-46 49 44 52 51 51 00 06  FIERQQ..FIDRQQ..
0000E0  46 49 57 52 51 51 00 0A-5F 5F 61 63 72 74 75 73  FIWRQQ..__acrtus
0000F0  65 64 00 13 5F 67 65 74-5F 65 78 70 65 72 69 6D  ed.._get_experim
000100  65 6E 74 5F 6B 65 79 00-11 5F 72 65 61 64 5F 72  ent_key.._read_r
000110  61 6D 5F 64 69 73 6B 5F-66 62 00 09 5F 5F 61 46  am_disk_fb..__aF
000120  75 6C 64 69 76 00 12 5F-67 65 74 5F 70 69 78 65  uldiv.._get_pixe
000130  6C 73 5F 70 65 72 5F 6D-6D 00 0C 5F 6D 65 73 73  ls_per_mm.._mess
000140  61 67 65 5F 6F 66 66 00-07 5F 5F 63 74 79 70 65  age_off..__ctype
000150  00 08 5F 73 70 72 69 6E-74 66 00 8A B4 09 00 06  .._sprintf......
000160  6D 76 5F 63 69 72 00 BD-8C 16 00 08 5F 6D 65 6E  mv_cir......_men
000170  75 5F 77 6E 00 09 5F 69-6D 5F 70 61 69 6E 74 00  u_wn.._im_paint.
000180  45 B4 1D 00 0D 63 6C 65-61 72 5F 59 4E 5F 66 6C  E....clear_YN_fl
000190  61 67 00 0B 52 45 50 4F-52 54 5F 43 49 52 43 00  ag..REPORT_CIRC.
0001A0  B5 8C 4E 01 07 5F 75 6E-6C 69 6E 6B 00 10 5F 63  ..N.._unlink.._c
0001B0  6C 65 61 72 5F 6D 65 6E-75 5F 61 72 65 61 00 08  lear_menu_area..
0001C0  5F 69 6D 5F 72 6F 77 72-00 17 5F 77 72 69 74 65  _im_rowr.._write
0001D0  5F 64 65 6E 73 69 74 79-5F 72 65 63 6F 72 64 39  _density_record9
0001E0  37 00 15 5F 63 6C 6F 73-65 5F 73 74 61 6E 64 61  7.._close_standa
0001F0  72 64 73 5F 66 69 6C 65-00 08 5F 69 6D 5F 72 6F  rds_file.._im_ro
000200  77 77 00 0A 5F 69 6D 5F-74 6F 64 69 73 6B 00 0E  ww.._im_todisk..
000210  5F 67 65 74 5F 73 74 61-6E 64 61 72 64 73 00 07  _get_standards..
000220  5F 65 72 72 6D 73 67 00-0C 5F 69 6D 5F 64 72 61  _errmsg.._im_dra
000230  77 6D 6F 64 65 00 0F 5F-73 65 74 5F 6D 65 6E 75  wmode.._set_menu
000240  5F 74 69 74 6C 65 00 06-5F 63 6C 6F 73 65 00 08  _title.._close..
000250  5F 71 75 61 64 5F 39 37-00 07 5F 73 74 72 64 73  _quad_97.._strds
000260  70 00 0E 5F 73 65 74 5F-6D 65 6E 75 5F 6C 69 6E  p.._set_menu_lin
000270  65 00 06 5F 64 65 6E 73-6D 00 0B 5F 69 6D 5F 6F  e.._densm.._im_o
000280  75 74 70 61 74 68 00 0C-5F 73 65 74 5F 6D 65 73  utpath.._set_mes
000290  73 61 67 65 00 07 5F 6D-76 5F 62 6F 78 00 0E 5F  sage.._mv_box.._
0002A0  69 6D 5F 69 6E 74 65 72-69 6D 61 67 65 00 11 5F  im_interimage.._
0002B0  73 65 74 5F 73 63 72 65-65 6E 5F 74 69 74 6C 65  set_screen_title
0002C0  00 0A 5F 69 6D 5F 63 69-72 63 6C 65 00 16 5F 67  .._im_circle.._g
0002D0  65 74 5F 66 5F 6F 70 74-69 63 61 6C 5F 64 65 6E  et_f_optical_den
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MODULE 3

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0002E0   73 69 74 79 00 0A 5F 69-6D 5F 70 69 78 62 6C 74   sity.._im_pixblt
0002F0   00 23 B4 19 00 0B 43 4C-45 41 52 5F 46 52 41 4D   .#....CLEAR_FRAM
000300   45 00 09 74 65 78 74 5F-70 72 65 70 00 13 8C 15   E..text_prep....
000310   00 12 5F 77 72 69 74 65-5F 72 61 6D 5F 64 69 73   .._write_ram_dis
000320   6B 5F 66 62 00 F3 B4 0A-00 07 72 6F 77 5F 74 78   k_fb......row_tx
000330   74 00 24 8C 4C 00 05 5F-6F 70 65 6E 00 1C 5F 75   t.$.L.._open.._u
000340   70 64 61 74 65 5F 6D 6F-75 73 65 5F 62 75 74 74   pdate_mouse_butt
000350   6F 6E 5F 64 69 73 70 6C-61 79 00 0C 5F 69 6D 5F   on_display.._im_
000360   73 65 74 63 6F 6C 6F 72-00 07 5F 49 4E 54 44 53   setcolor.._INTDS
000370   50 00 0D 5F 69 6D 5F 73-65 74 62 63 6F 6C 6F 72   P.._im_setbcolor
000380   00 8B B4 0E 00 0B 4C 41-42 45 4C 5F 43 45 4C 4C   ......LABEL_CELL
000390   53 00 01 8C 2B 00 09 5F-69 6D 5F 6F 62 73 75 6D   S...+.._im_obsum
0003A0   00 03 5F 6B 69 00 07 5F-76 5F 70 6C 73 74 00 0F   .._ki.._v_plst..
0003B0   5F 67 65 74 5F 64 69 73-6B 5F 73 70 61 63 65 00   _get_disk_space.
0003C0   2F B4 0B 00 08 6C 61 62-65 6C 5F 72 63 00 05 8C   /....label_rc...
0003D0   73 00 07 5F 6B 69 5F 63-68 6B 00 08 5F 69 6D 5F   s.._ki_chk.._im_
0003E0   69 6E 69 74 00 17 5F 67-65 74 5F 72 61 6D 64 69   init.._get_ramdi
0003F0   73 6B 5F 66 72 65 65 5F-73 70 61 63 65 00 0A 5F   sk_free_space.._
000400   69 6D 5F 6F 70 6D 6F 64-65 00 06 5F 77 72 69 74   im_opmode.._writ
000410   65 00 0D 5F 69 6D 5F 64-69 73 66 6F 72 6D 61 74   e.._im_disformat
000420   00 09 5F 69 6D 5F 76 69-64 65 6F 00 0C 5F 6F 6B   .._im_video.._ok
000430   5F 74 6F 5F 70 72 69 6E-74 00 08 5F 69 6D 5F 73   _to_print.._im_s
000440   79 6E 63 00 3A B4 18 00-07 42 55 49 4C 44 5F 33   ync.:....BUILD_3
000450   00 0C 51 55 41 44 5F 39-37 5F 4C 4F 47 4F 00 95   ..QUAD_97_LOGO..
000460   8C 32 00 07 5F 6D 6F 75-73 65 72 00 12 5F 64 65   .2.._mouser.._de
000470   6C 65 74 65 5F 72 61 6D-64 69 73 6B 5F 66 62 00   lete_ramdisk_fb.
000480   08 5F 69 6D 5F 6D 6F 76-65 00 08 5F 69 6D 5F 72   ._im_move.._im_r
000490   65 63 74 00 4F B4 0E 00-0B 52 45 50 4F 52 54 5F   ect.O....REPORT_
0004A0   4D 4F 44 45 00 D3 8C 54-00 07 5F 53 54 52 44 53   MODE...T.._STRDS
0004B0   50 00 1C 5F 67 65 74 5F-73 74 61 6E 64 61 72 64   P.._get_standard
0004C0   5F 67 72 69 64 5F 73 74-72 75 63 74 75 72 65 00   _grid_structure.
0004D0   1C 5F 70 75 74 5F 66 69-72 73 74 5F 64 65 6E 73   ._put_first_dens
0004E0   69 74 79 5F 73 74 72 75-63 74 75 72 65 00 0C 5F   ity_structure.._
0004F0   69 6D 5F 66 72 6F 6D 64-69 73 6B 00 11 B4 10 00   im_fromdisk.....
000500   0D 59 4E 72 65 73 70 6F-6E 73 65 6D 73 67 00 D2   .YNresponsemsg..
000510   8C 2B 00 09 5F 63 6C 5F-6F 76 6C 75 74 00 06 5F   .+.._cl_ovlut.._
000520   5F 66 74 6F 6C 00 08 5F-69 6D 5F 77 6C 75 74 00   _ftol.._im_wlut.
000530   0B 5F 69 6D 5F 6F 75 74-6D 6F 64 65 00 FC B4 0A   ._im_outmode....
000540   00 07 4D 56 5F 43 49 52-34 00 27 8C 4A 00 08 5F   ..MV_CIR4.'.J.._
000550   69 6D 5F 6D 61 73 6B 00-09 5F 69 6D 5F 69 6D 61   im_mask.._im_ima
000560   67 65 00 1A 5F 70 75 74-5F 6E 74 68 5F 64 65 6E   ge.._put_nth_den
000570   73 69 74 79 5F 73 74 72-75 63 74 75 72 65 00 09   sity_structure..
000580   5F 69 6D 5F 63 6C 65 61-72 00 0B 5F 6D 65 73 73   _im_clear.._mess
000590   61 67 65 5F 6F 6E 00 E9-B6 2D 00 00 01 06 6D 76   age_on...-....mv
0005A0   5F 63 69 72 46 23 00 0D-63 6C 65 61 72 5F 59 4E   _cirF#..clear_YN
0005B0   5F 66 6C 61 67 8C 00 00-0B 52 45 50 4F 52 54 5F   _flag....REPORT_
```

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0005C0   43 49 52 43 94 1A 00 79-90 2A 00 00 01 17 5F 77   CIRC...y.*...._w
0005D0   72 69 74 65 5F 64 65 6E-73 69 74 79 5F 72 65 63   rite_density_rec
0005E0   6F 72 64 39 37 9A 00 00-08 5F 71 75 61 64 5F 39   ord97...._quad_9
0005F0   37 6E 01 00 0D B6 8B 00-00 01 0B 43 4C 45 41 52   7n.........CLEAR
000600   5F 46 52 41 4D 45 30 1F-00 09 74 65 78 74 5F 70   _FRAME0...text_p
000610   72 65 70 D6 19 00 07 72-6F 77 5F 74 78 74 FC 19   rep....row_txt..
000620   00 0B 4C 41 42 45 4C 5F-43 45 4C 4C 53 8E 1F 00   ..LABEL_CELLS...
000630   08 6C 61 62 65 6C 5F 72-63 02 20 00 07 42 55 49   .label_rc. ..BUI
000640   4C 44 5F 33 6C 1E 00 0C-51 55 41 44 5F 39 37 5F   LD_31...QUAD_97_
000650   4C 4F 47 4F 06 18 00 0B-52 45 50 4F 52 54 5F 4D   LOGO....REPORT_M
000660   4F 44 45 22 1A 00 0D 59-4E 72 65 73 70 6F 6E 73   ODE"...YNrespons
000670   65 6D 73 67 00 00 00 07-4D 56 5F 43 49 52 34 26   emsg....MV_CIR4&
000680   22 00 2A 88 04 00 00 A2-01 D1 A0 D2 00 02 06 00   ".*.............
000690   4E 6F 20 73 74 61 6E 64-61 72 64 73 20 66 69 6C   No standards fil
0006A0   65 20 65 78 69 73 74 73-2C 20 63 61 6E 27 74 20   e exists, can't
0006B0   73 61 76 65 20 64 61 74-61 2E 0A 50 72 65 73 73   save data..Press
0006C0   20 61 6E 79 20 6B 65 79-20 74 6F 20 63 6F 6E 74    any key to cont
0006D0   69 6E 75 65 2E 00 71 75-61 64 5F 39 37 3A 20 43   inue..quad_97: C
0006E0   61 6E 27 74 20 77 72 69-74 65 20 63 65 6C 6C 20   an't write cell
0006F0   64 65 6E 73 69 74 79 20-64 61 74 61 20 74 6F 20   density data to
000700   73 74 61 6E 64 61 72 64-73 20 66 69 6C 65 2E 20   standards file.
000710   43 61 6C 6C 20 42 56 49-2E 00 71 75 61 64 5F 39   Call BVI..quad_9
000720   37 3A 20 43 61 6E 27 74-20 77 72 69 74 65 20 63   7: Can't write c
000730   65 6C 6C 20 64 65 6E 73-69 74 79 20 64 61 74 61   ell density data
000740   20 74 6F 20 73 74 61 6E-64 61 72 64 73 20 66 69    to standards fi
000750   6C 65 2E 20 43 61 6C 6C-20 42 56 49 2E 00 EB A0   le. Call BVI....
000760   67 02 02 D6 00 42 69 6F-6C 6F 67 69 63 61 6C 20   g....Biological
000770   56 69 73 69 6F 6E 20 2D-20 51 55 41 44 20 2D 20   Vision - QUAD -
000780   50 72 6F 62 65 20 64 69-66 66 65 72 65 6E 63 65   Probe difference
000790   20 61 6E 64 20 25 20 63-68 61 6E 67 65 00 71 75    and % change.qu
0007A0   61 64 5F 39 37 3A 20 4E-6F 74 20 65 6E 6F 75 67   ad_97: Not enoug
0007B0   68 20 64 69 73 6B 20 73-70 61 63 65 20 74 6F 20   h disk space to
0007C0   72 75 6E 2E 00 71 75 61-64 5F 39 37 3A 20 4E 6F   run..quad_97: No
0007D0   74 20 65 6E 6F 75 67 68-20 72 61 6D 20 64 69 73   t enough ram dis
0007E0   6B 20 73 70 61 63 65 20-74 6F 20 72 75 6E 2E 00   k space to run..
0007F0   2D 2D 2D 2D 2D 20 50 52-4F 43 45 53 53 49 4E 47   ----- PROCESSING
000800   20 49 4D 41 47 45 53 20-2D 2D 2D 2D 2D 00 43 61    IMAGES -----.Ca
000810   6E 27 74 20 61 63 63 65-73 73 20 67 72 69 64 20   n't access grid
000820   64 61 74 61 2C 20 75 73-69 6E 67 20 64 65 66 61   data, using defa
000830   75 6C 74 73 00 55 73 69-6E 67 20 64 65 66 61 75   ults.Using defau
000840   6C 74 20 67 72 69 64 20-73 74 72 75 63 74 75 72   lt grid structur
000850   65 20 64 61 74 61 00 5C-62 76 69 5C 6D 69 6E 2E   e data.\bvi\min.
000860   70 69 63 00 5C 62 76 69-5C 68 6F 6C 64 2E 70 69   pic.\bvi\hold.pi
000870   63 00 2D 2D 2D 2D 2D 20-43 41 4C 43 55 4C 41 54   c.----- CALCULAT
000880   49 4E 47 20 4F 50 54 49-43 41 4C 20 44 45 4E 53   ING OPTICAL DENS
000890   49 54 59 20 2D 2D 2D 2D-2D 00 2D 2D 2D 2D 2D 20   ITY -----.-----
```

```
0008A0  50 52 4F 43 45 53 53 49-4E 47 20 49 4D 41 47 45   PROCESSING IMAGE
0008B0  53 20 2D 2D 2D 2D 2D 00-43 68 65 63 6B 20 70 72   S -----.Check pr
0008C0  69 6E 74 65 72 20 73 74-61 74 75 73 2C 20 70 72   inter status, pr
0008D0  65 73 73 20 49 20 74 6F-20 69 67 6E 6F 72 65 20   ess I to ignore
0008E0  69 74 2C 20 43 20 74 6F-20 63 6F 6E 74 69 6E 75   it, C to continu
0008F0  65 2E 00 50 52 4E 00 2A-2A 2A 2A 20 43 61 6E 20   e..PRN.**** Can
000900  6E 6F 74 20 6F 70 65 6E-20 64 65 76 69 63 65 20   not open device
000910  4C 69 6E 65 20 50 72 69-6E 74 65 72 20 2A 2A 2A   Line Printer ***
000920  2A 00 25 63 00 5C 62 76-69 5C 68 6F 6C 64 2E 70   *.%c.\bvi\hoid.p
000930  69 63 00 5C 62 76 69 5C-6D 69 6E 2E 70 69 63 00   ic.\bvi\min.pic.
000940  43 68 65 63 6B 20 70 72-69 6E 74 65 72 20 73 74   Check printer st
000950  61 74 75 73 2C 20 70 72-65 73 73 20 49 20 74 6F   atus, press I to
000960  20 69 67 6E 6F 72 65 20-69 74 2C 20 43 20 74 6F    ignore it, C to
000970  20 63 6F 6E 74 69 6E 75-65 2E 00 50 52 4E 00 2A    continue..PRN.*
000980  2A 2A 2A 20 43 61 6E 20-6E 6F 74 20 6F 70 65 6E   *** Can not open
000990  20 64 65 76 69 63 65 20-4C 69 6E 65 20 50 72 69    device Line Pri
0009A0  6E 74 65 72 20 2A 2A 2A-2A 00 25 63 00 5C 62 76   nter ****.%c.\bv
0009B0  69 5C 6D 69 6E 2E 70 69-63 00 5C 62 76 69 5C 68   i\min.pic.\bvi\h
0009C0  6F 6C 64 2E 70 69 63 00-71 A0 E9 03 02 F8 03 4D   old.pic.q......M
0009D0  6F 76 65 20 74 68 65 20-6D 6F 75 73 65 20 74 6F   ove the mouse to
0009E0  20 70 6F 73 69 74 69 6F-6E 20 74 68 65 20 77 69    position the wi
0009F0  6E 64 6F 77 20 69 6E 74-6F 20 74 68 65 20 69 6D   ndow into the im
000A00  61 67 65 73 00 53 75 72-72 6F 75 6E 64 20 61 20   ages.Surround a
000A10  64 6F 74 20 77 69 74 68-20 74 68 65 20 63 75 72   dot with the cur
000A20  73 6F 72 73 20 62 79 20-6D 6F 76 69 6E 67 20 74   sors by moving t
000A30  68 65 20 6D 6F 75 73 65-00 20 20 20 20 20 20 20   he mouse.
000A40  20 20 20 20 4D 4F 55 53-45 20 42 55 54 54 4F 4E       MOUSE BUTTON
000A50  20 41 43 54 49 4F 4E 20-4D 45 4E 55 20 20 20 20    ACTION MENU
000A60  20 20 20 20 20 20 00 CD-CD CD CD CD CD CD CD CD         .........
000A70  CD CD CD CD CD CD CB CD-CD CD CD CD CD CD CD CD   ................
000A80  CD CD CD CD CD CD CB CD-CD CD CD CD CD CD CD CD   ................
000A90  CD CD CD CD CD 00 20 20-4C 45 46 54 20 42 55 54   ......  LEFT BUT
000AA0  54 4F 4E 20 20 BA 20 4D-49 44 44 4C 45 20 42 55   TON  . MIDDLE BU
000AB0  54 54 4F 4E 20 BA 20 52-49 47 48 54 20 42 55 54   TTON . RIGHT BUT
000AC0  54 4F 4E 20 00 20 20 C4-54 6F 67 67 6C 65 20 74   TON .  .Toggle t
000AD0  6F C4 20 20 BA 20 C4 C4-C4 48 6F 6C 64 20 74 6F   o.  . ...Hold to
000AE0  C4 C4 C4 20 BA 20 C4 C4-50 72 65 73 73 20 74 6F   ... . ..Press to
000AF0  C4 C4 20 00 20 4D 4F 56-45 20 49 6D 61 67 65 73   .. . MOVE Images
000B00  20 2F 20 BA 20 20 43 48-41 4E 47 45 20 53 49 5A    / .  CHANGE SIZ
000B10  45 20 20 BA 20 20 43 41-4C 43 55 4C 41 54 45 20   E  .  CALCULATE
000B20  20 20 00 20 4D 4F 56 45-20 43 75 72 73 6F 72 73     . MOVE Cursors
000B30  20 20 BA 20 20 20 6F 66-20 43 69 72 63 6C 65 20     .   of Circle
000B40  20 20 BA 20 4F 44 20 69-6E 20 63 75 72 73 6F 72     . OD in cursor
000B50  20 00 CD CD CD CD CD CD-CD CD CD CD CD CD CD CD    ...............
000B60  CD CA CD CD CD CD CD CD-CD D1 CD CD CD CD CD CD   ................
000B70  CD CA CD CD CD CD CD CD-CD CD CD CD CD CD CD CD   ................
```

```
000BB0   00 20 20 20 20 20 4C 45-46 54 20 26 20 4D 49 44   .      LEFT & MID
000B90   44 4C 45 20 20 20 20 20-B3 20 20 20 20 4D 49 44   DLE      .    MID
000BA0   44 4C 45 20 26 20 52 49-47 48 54 20 20 20 20 00   DLE & RIGHT     .
000BB0   20 C4 C4 53 41 56 45 2F-50 52 49 4E 54 20 56 61    ..SAVE/PRINT Va
000BC0   6C 75 65 73 C4 C4 20 B3-20 20 20 20 C4 C4 C4 4E   lues.. .    ...N
000BD0   6F 74 20 55 73 65 64 C4-C4 C4 20 20 20 20 00 CD   ot Used...     ..
000BE0   CD CD CD CD CD CD CD CD-CD CD CD CD CD CD CD CD   ................
000BF0   CD CD CD CD CD CD CF CD-CD CD CD CD CD CD CD CD   ................
000C00   CD CD CD CD CD CD CD CD-CD CD CD CD CD 00 20 20   ..............
000C10   20 20 20 20 20 20 20 20-20 4C 45 46 54 20 20 26            LEFT  &
000C20   20 20 4D 49 44 44 4C 45-20 20 26 20 20 52 49 47     MIDDLE  &  RIG
000C30   48 54 20 20 20 20 20 20-20 20 20 00 20 20 20 20   HT          .
000C40   20 20 20 20 20 20 20 20-C4 C4 C4 C4 50 72 65 73           ....Pres
000C50   73 20 41 6C 6C 20 54 68-72 65 65 20 74 6F C4 C4   s All Three to..
000C60   C4 20 20 20 20 20 20 20-20 20 20 00 20 20 20 20   .          .
000C70   45 58 49 54 20 50 72 6F-62 65 20 44 69 66 66 65   EXIT Probe Diffe
000C80   72 65 6E 63 65 20 26 20-50 65 72 63 65 6E 74 20   rence & Percent
000C90   43 68 61 6E 67 65 20 20-20 20 00 CD CD CD CD CD   Change    ......
000CA0   CD CD CD CD CD CD CD CD-CD CD CD CD CD CD CD CD   ................
000CB0   CD CD CD CD CD CD CD CD-CD CD CD CD CD CD CD CD   ................
000CC0   CD CD CD CD CD CD CD CD-CD 00 20 20 31 2E 20 4D   ..........  1. M
000CD0   6F 76 65 20 72 65 63 74-61 6E 67 6C 65 20 74 6F   ove rectangle to
000CE0   20 73 65 6C 65 63 74 20-61 6E 61 6C 79 73 69 73    select analysis
000CF0   20 72 65 67 69 6F 6E 2E-00 20 20 32 2E 20 4C 65    region..  2. Le
000D00   66 74 20 42 75 74 74 6F-6E 20 74 6F 20 73 77 69   ft Button to swi
000D10   74 63 68 20 74 6F 20 61-6E 61 6C 79 73 69 73 20   tch to analysis
000D20   6D 6F 64 65 2E 20 20 00-20 20 33 2E 20 53 69 7A   mode.  .  3. Siz
000D30   65 20 61 6E 64 20 6D 6F-76 65 20 63 75 72 73 6F   e and move curso
000D40   72 20 61 6E 64 20 63 61-6C 63 75 6C 61 74 65 20   r and calculate
000D50   4F 44 2E 20 20 20 00 CD-CD CD CD CD CD CD CD CD   OD.   .........
000D60   CD CD CD CD CD CD CD CD-CD CD CD CD CD CD CD CD   ................
000D70   CD CD CD CD CD CD CD CD-CD CD CD CD CD CD CD CD   ................
000D80   CD CD CD CD 3C A0 21 00-02 AD 07 CD 00 31 00 32   ....<.!......1.2
000D90   00 33 00 34 00 35 00 36-00 37 00 38 00 39 00 31   .3.4.5.6.7.8.9.1
000DA0   30 00 31 31 00 31 32 00-B9 A0 14 00 02 FA 07 41   0.11.12........A
000DB0   00 42 00 43 00 44 00 45-00 46 00 47 00 48 00 25   .B.C.D.E.F.G.H.%
000DC0   A0 2E 02 02 2A 08 4D 6F-76 65 20 43 69 72 63 6C   ....*.Move Circl
000DD0   65 73 20 2F 20 52 61 64-69 75 73 20 3D 20 25 32   es / Radius = %2
000DE0   64 00 53 69 7A 65 20 43-69 72 63 6C 65 73 20 2F   d.Size Circles /
000DF0   20 52 61 64 69 75 73 20-3D 20 25 32 64 00 4D 6F    Radius = %2d.Mo
000E00   76 65 20 49 6D 61 67 65-73 00 29 00 20 C9 CD CD   ve Images.). ...
000E10   CD CD CD CD CD CD CD CD-CD CD D1 CD CD CD CD CD   ................
000E20   CD CD CD CD CD CD CD CD-CD D1 CD CD CD CD CD CD   ................
000E30   CD CD CD CD CD CD CD BB-00 20 BA 20 20 20 20 20   .........  .
000E40   25 36 64 20 20 B3 20 20-20 20 25 36 64 20 20 20   %6d   .    %6d
000E50   B3 20 43 65 6C 6C 20 20-3D 20 25 73 25 32 73 20   . Cell  = %s%2s
```

```
002B20  0E 9C C4 0B 56 05 C4 06-56 05 C4 00 56 05 03 A0  ....V...V...V.S.
002B30  B6 03 01 42 11 9A 00 00-00 00 83 C4 08 8D 86 FC  ...B............
002B40  F6 89 46 D4 8C 56 D6 6A-0A 1E 68 93 02 16 50 9A  ..F..V.j..h...P.
002B50  00 00 00 00 83 C4 0A 6A-01 8D 86 FC F6 16 50 FF  .......j......P.
002B60  76 A2 9A 00 00 00 00 83-C4 08 FF 76 A2 9A 00 00  v..........v....
002B70  00 00 83 C4 02 C7 86 BA-F6 00 00 C7 86 4C F7 00  .............L..
002B80  00 68 FE 00 9A 00 00 00-00 83 C4 02 6A 00 6A 02  .h..........j.j.
002B90  9A 00 00 00 00 83 C4 04-6A 00 FF 76 BC 6A FF FF  ........j..v.j..
002BA0  76 BA 9A 00 00 00 00 83-C4 08 FF 76 BC 6A 00 9A  v..........v.j..
002BB0  00 00 00 00 83 C4 04 1E-68 96 02 9A 00 00 00 00  ........h.......
002BC0  83 C4 04 FF 76 BA 6A 00-9A 00 00 00 00 83 C4 04  ....v.j.........
002BD0  1E 68 A4 02 9A 00 00 00-00 83 C4 04 8B 86 EA F6  .h..............
002BE0  99 2B C2 D1 F8 40 89 86-D4 F6 8B 86 DC F6 99 2B  .+...@.........+
002BF0  C2 D1 F8 05 F1 00 89 86-BE F6 FF B6 A0 F2 9A 00  ................
002C00  00 00 00 83 C4 02 A1 0A-00 99 B9 04 00 F7 F9 8B  ................
002C10  C8 A1 06 00 99 2B C2 D1-F8 03 C1 89 46 D0 2B F6  .....+......F.+.
002C20  A1 0A 00 99 2B C2 D1 F8-F7 EE 03 46 D0 89 46 A0  ....+......F..F.
002C30  56 0E E8 00 00 83 C4 02-8B D8 8E C2 57 8B FB B9  V...........W...
002C40  FF FF 33 C0 F2 AE F7 D1-49 5F 8B F9 56 0E E8 00  ..3.....I_..V...
002C50  00 83 C4 02 52 50 57 57-6A 01 68 FA 00 FF 76 A0  ....RPWWj.n...v.
002C60  6A 01 6A 00 9A 00 00 00-00 83 C4 12 46 83 FE 0B  j.j.........F...
002C70  7E AE 89 BE 5A F7 89 B6-A6 F4 A1 0C 00 99 B9 04  ~...Z...........
002C80  00 F7 F9 8B C8 A1 08 00-99 2B C2 D1 F8 03 C1 05  .........+......
002C90  F7 00 89 46 C8 2B F6 A1-0C 00 99 2B C2 D1 F8 F7  ...F.+.....+....
002CA0  EE 03 46 C8 89 86 5C F7-56 0E E8 00 00 83 C4 02  ..F...\.V.......
002CB0  8B D8 8E C2 57 8B FB B9-FF FF 33 C0 F2 AE F7 D1  ....W.....3.....
002CC0  49 5F 8B F9 56 0E E8 00-00 83 C4 02 52 50 57 57  I_..V.......RPWW
002CD0  6A 02 FF B6 5C F7 6A 08-6A 01 6A 00 9A 00 00 00  j...\.j.j.j.....
002CE0  00 83 C4 12 46 83 FE 07-7E AD 89 BE 5A F7 89 B6  ....F...~...Z...
002CF0  A6 F4 8B 86 BE F6 03 86-D8 F6 50 8B 86 D4 F6 03  ..........P.....
002D00  86 E0 F6 50 FF B6 BE F6-FF B6 D4 F6 FF 76 BA 6A  ...P.........v.j
002D10  00 9A 00 00 00 00 83 C4-0C FF B6 D2 F6 FF B6 DE  ................
002D20  F6 FF B6 DC F6 FF B6 EA-F6 0E E8 00 00 83 C4 08  ................
002D30  FF B6 A0 F2 9A 00 00 00-00 83 C4 02 E9 74 04 83  .............t..
002D40  7E A4 00 74 03 E9 FD 02-FF 76 BC 6A 01 9A 00 00  ~..t.....v.j....
002D50  00 00 83 C4 04 68 FF 00-9A 00 00 00 00 83 C4 02  .....h..........
002D60  FF B6 A0 F2 9A 00 00 00-00 83 C4 02 FF B6 EC F6  ................
002D70  9A 00 00 00 00 83 C4 02-FF 76 BA 6A 00 9A 00 00  .........v.j....
002D80  00 00 83 C4 04 FF 76 BA-9A 00 00 00 00 83 C4 02  ......v.........
002D90  6A 00 6A 02 9A 00 00 00-00 83 C4 04 6A 01 6A 00  j.j.........j.j.
002DA0  9A 00 00 00 00 83 C4 04-6A 00 9A 00 00 00 00 83  ........j.......
002DB0  C4 02 2B F6 8B 9E 54 F7-C1 E3 02 8B 87 7C 03 8B  ..+...T......|..
002DC0  97 7E 03 89 86 84 F2 89-96 86 F2 8D 86 B0 F6 89  .~..............
002DD0  86 8E F2 8C 96 90 F2 8D-86 C4 F6 89 86 9A F2 8C  ................
002DE0  96 9C F2 8D 46 F4 89 86-80 F2 8C 96 82 F2 8D 46  ....F..........F
002DF0  F4 89 86 7C F2 8C 96 7E-F2 8B BE A0 F2 6A 01 68  ...|...~.....j.h
```

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002E00  F0 00 6A 06 FF 76 BC FF-76 BC 9A 00 00 00 00 83   ..j..v..v.......
002E10  C4 0A 57 9A 00 00 00 00-83 C4 02 C4 9E 8E F2 26   ..W............&
002E20  8B 07 03 86 CC F6 50 C4-9E 9A F2 26 8B 07 03 86   ......P....&....
002E30  DA F6 50 FF B6 54 F7 FF-76 BC 6A 00 0E E8 00 00   ..P..T..v.j.....
002E40  83 C4 0A 57 6A 00 9A 00-00 00 00 83 C4 04 6A 00   ...Wj.........j.
002E50  6A 02 9A 00 00 00 00 83-C4 04 FF B6 EC F6 9A 00   j...............
002E60  00 00 00 83 C4 02 57 FF-76 BC FF 76 BA 9A 00 00   ......W.v..v....
002E70  00 00 83 C4 06 89 46 AE-89 56 B0 83 FE 02 7C 29   ......F..V....|)
002E80  89 96 76 F2 89 96 74 F2-C7 86 78 F2 00 00 C7 86   ..v...t...x.....
002E90  7A F2 00 00 9B DF AE 74-F2 9B D8 4E A8 9A 00 00   z......t...N....
002EA0  00 00 C4 9E 80 F2 EB 18-90 FF 56 86 F1 FF B6 84   ................
002EB0  F2 FF 76 B0 FF 76 AE 9A-00 00 00 00 C4 9E 70 F2   ..v..v........|.
002EC0  26 89 07 83 86 8E F2 02-83 86 9A F2 02 83 86 80   &...............
002ED0  F2 02 83 86 7C F2 02 46-83 FE 03 7F 03 E9 1D FF   ....|..F........
002EE0  89 B6 A6 F4 8B 46 FA 06-7C C6 00 CF 81 56 0A CF   .....F.......V..
002EF0  69 56 51 C7 64 56 05 C7-5F 56 05 CF 39 56 36 CF   iVQ.dV.._V..9V6.
002F00  2A 56 55 CF 1E 56 3E CF-12 56 11 87 07 56 0F CE   *VU..V>..V...V..
002F10  DF 56 55 CE D6 56 56 C6-8C 9D C6 86 91 CE 76 56   .VU..VV.......vV
002F20  53 CE 6C 56 41 CE 60 56-3E CE 54 56 07 CE 49 56   S.lVA.`V>.TV..IV
002F30  3E CE 3C 56 55 CE 30 56-32 CE 24 56 34 CE 19 56   >.<VU.0V2.$V4..V
002F40  3E CE 00 56 55 85 F6 56-44 CD DD 56 26 CD A8 56   >..VU..VD..V&..V
002F50  21 85 92 56 2F 85 76 56-2F C5 63 9F C5 51 9F C5   !..V/.vV/.c..Q..
002F60  46 9F CD 30 56 21 85 1A-56 2D 84 FE 56 2D C4 EC   F..0V!..V-..V-..
002F70  9F C4 DD 9F C4 D2 9F CC-CA 56 55 CC A0 56 4E C4   .........VU..VN.
002F80  9D 9D CC 94 56 3E CC 87-56 4E C4 84 9D CC 7B 56   ....V>..VN....{V
002F90  3E CC 6E 56 24 CC 5C 56-3E CC 50 56 55 CC 39 56   >.nV$.\V>.PVU.9V
002FA0  1F CC 2E 56 3F CC 1B 56-0E C4 16 9D CC 01 56 3F   ...V?..V......V?
002FB0  11 A0 B4 03 01 F4 14 2B-46 F8 89 46 FC 8B 46 FA   .......+F..F..F.
002FC0  3B 46 F8 7E 03 8B 46 F8-89 86 52 F7 0B C0 75 06   ;F.~..F...R...u.
002FD0  C7 86 52 F7 01 00 6B 46-FC 64 99 F7 BE 52 F7 89   ..R...kF.d...R..
002FE0  46 FE 6A 00 9A 00 00 00-00 83 C4 02 FF B6 EC F6   F.j.............
002FF0  9A 00 00 00 00 83 C4 02-6A 01 68 FE 00 6A 06 FF   ........j.h..j..
003000  76 BC FF 76 BC 9A 00 00-00 00 83 C4 0A 6A 01 FF   v..v.........j..
003010  76 BC 6A FF FF 76 BA 9A-00 00 00 00 83 C4 08 6A   v.j..v.........j
003020  01 6A 01 9A 00 00 00 00-83 C4 04 6A 00 9A 00 00   .j.........j....
003030  00 00 83 C4 02 FF B6 A0-F2 9A 00 00 00 00 83 C4   ................
003040  02 C7 86 BA F6 01 00 FF-B6 4C F7 8D 46 D8 16 50   .........L..F..P
003050  8D 86 FC F6 16 50 9B D9-86 F8 F6 83 EC 08 8B DC   .....P..........
003060  9B 36 DD 1F 9B D9 86 4E-F7 83 EC 08 8B DC 9B 36   .6.....N.......6
003070  DD 1F 90 9B FF 36 0C 00-FF 36 0A 00 FF B6 54 F7   .....6...6....T.
003080  FF B6 CC F6 FF B6 DA F6-8D 46 F4 16 50 0E E8 00   .........F..P...
003090  00 83 C4 28 0E E8 00 00-FF 76 B6 FF 76 CC FF 76   ...(.....v..v..v
0030A0  CA FF 76 D2 FF B6 A4 F4-FF 76 B8 FF 36 0C 00 FF   ..v......v..6...
0030B0  36 0A 00 0E E8 00 00 83-C4 10 68 FF 00 9A 00 00   6.........h.....
0030C0  00 00 83 C4 02 C7 86 C2-F6 00 00 FF B6 54 F7 6A   .............T.j
0030D0  00 FF 76 A4 0E E8 00 00-83 C4 06 6A 00 6A 02 9A   ..v........j.j..
```

```
0030E0  00 00 00 00 83 C4 04 FF-B6 A0 F2 9A 00 00 00 00   ................
0030F0  83 C4 02 FF B6 CC F6 FF-B6 DA F6 FF B6 54 F7 FF   .............T..
003100  76 BA 6A 00 0E E8 00 00-83 C4 0A 6A 00 9A 00 00   v.j........j....
003110  00 00 83 C4 02 83 7E A4-01 74 03 E9 65 01 C7 46   ......~..t..e..F
003120  A4 01 00 E9 5D 01 90 83-BE BA F6 00 75 03 E9 D5   ....]......u...
003130  F3 9B DF 46 FA 83 EC 04-8B DC 9B 36 D9 1F 9B DF   ...F.......6....
003140  46 F8 83 EC 04 8B DC 9B-36 D9 1F 90 9B FF B6 CC   F.......6.......
003150  F6 FF B6 DA F6 0E E8 00-00 83 C4 0C 80 3E 04 00   .............>..
003160  00 74 18 9A 00 00 00 00-0B C0 75 0F 6A 49 6A 43   .t.........u.jIjC
003170  1E 68 B1 02 0E E8 00 00-83 C4 08 80 3E 04 00 00   .h..........>...
003180  75 03 E9 E0 00 C7 86 A6-F4 00 00 8D 46 D8 8B D8   u...........F...
003190  8B FE 8C D0 8E C0 B9 FF-FF 33 C0 F2 AE F7 D1 49   ..........3.....I
0031A0  74 3B 6B 06 7A 03 16 88-F8 8B B6 A6 F4 8A 42 D8   t;k.z..........B.
0031B0  8B DE 03 DF 03 DD 36 88-87 60 F7 46 8B C6 8D 4E   ......6..`.F...N
0031C0  D8 8B D9 8B D0 57 8B FB-8C D0 B9 FF FF 33 C0 F2   .....W.......3..
0031D0  AE F7 D1 49 5F 3B D1 72-D4 89 B6 A6 F4 FF 06 7A   ...I_;.r........z
0031E0  03 6A 01 1E 68 EC 02 9A-00 00 00 00 83 C4 06 89   .j..h...........
0031F0  46 A2 40 75 10 1E 68 F0-02 6A 01 9A 00 00 00 00   F.@u..h..j......
003200  83 C4 06 EB 55 8D 86 FC-F6 8B D8 8B FB 8C D0 8E   ....U...........
003210  C0 B9 FF FF 33 C0 F2 AE-F7 D1 49 51 8D 86 FC F6   ....3.....IQ....
003220  16 50 FF 76 A2 9A 00 00-00 00 83 C4 08 8D 86 FC   .P.v............
003230  F6 89 46 D4 8C 56 D6 6A-0A 1E 68 1B 03 16 50 9A   ..F..V.j..h...P.
003240  00 00 00 00 83 C4 0A 6A-01 8D 86 FC F6 16 50 FF   .......j......P.
003250  76 A2 9A 00 00 00 00 83-C4 08 FF 76 A2 9A 00 00   v..........v....
003260  00 00 83 C4 02 C7 86 BA-F6 00 00 C7 86 4C F7 01   .............L..
003270  00 6A 01 0E E8 00 00 83-C4 02 E9 89 F2 C7 86 D6   .j..............
003280  F6 04 00 83 BE D6 F6 03-7F 03 E9 8E F2 A1 00 00   ...............
003290  0E 06 02 00 74 10 FF 36-02 00 FF 36 00 00 9A 00   ....t..6...6....
0032A0  00 00 00 83 C4 04 1E 68-1E 03 9A 00 00 00 00 83   .......h........
0032B0  C4 04 1E 68 2B 03 9A 00-00 00 00 83 C4 04 9A 00   ...h+...........
0032C0  00 00 00 1F 5E 5F C9 CB-90 C8 00 00 00 1E B8 00   ....^_..........
0032D0  00 8E D8 83 7E 06 00 75-06 1E 68 F8 03 EB 04 1E   ....~..u..h.....
0032E0  68 2E 04 6A 01 9A 00 00-00 00 83 C4 06 9A 00 00   h..j............
0032F0  00 00 1E 68 62 04 9A 00-00 00 00 83 C4 04 B8 00   ...hb...........
003300  00 BA 00 00 52 50 1E 68-90 04 6A 00 6A 01 9A 00   ....RP.h..j.j...
003310  00 00 00 83 C4 0C B8 00-00 BA 00 00 52 50 1E 68   ............RP.h
003320  BF 04 6A 00 6A 02 9A 00-00 00 00 83 C4 0C B8 00   ..j.j...........
003330  00 BA 00 00 52 50 1E 68-EE 04 6A 00 6A 03 9A 00   ....RP.h..j.j...
003340  00 00 00 83 C4 0C B8 00-00 BA 00 00 52 50 1E 68   ............RP.h
003350  1D 05 6A 00 6A 04 9A 00-00 00 00 83 C4 0C B8 00   ..j.j...........
003360  00 BA 00 00 52 50 1E 5A-9C 43 01 CB AB 56 10 C7   ....RP.Z.C...V..
003370  A8 56 10 CF A0 56 38 C7-99 9D CB 93 56 10 C7 90   .V...V8.....V...
003380  56 10 CF 88 56 38 C7 81-9D CB 7B 56 10 C7 78 56   V...V8....{V..xV
003390  10 CF 70 56 38 C7 69 9D-CB 63 56 10 C7 60 56 10   ..pV8.i..cV..`V.
0033A0  CF 58 56 38 C7 51 9D CB-4B 56 10 C7 48 56 10 CF   .XV8.Q..KV..HV..
0033B0  40 56 1E C7 3D 9D CF 37-56 15 CF 2F 56 25 C7 2A   @V..=..7V../V%.*
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0033C0   9D C7 24 9D CB 18 9D CF-08 56 47 CF 00 56 14 C6   ..$......VG..V..
0033D0   FD 9D CE F4 56 14 C6 F1-9D CE E8 56 18 C6 E5 9D   ....V......V....
0033E0   C6 E1 9D C6 DB 9D C6 D7-9D 86 BE 56 45 CE A7 56   ...........VE..V
0033F0   1F CE 9C 56 3F CE 89 56-0E C6 84 9D CE 6F 56 3F   ...V?..V.....oV?
003400   CE 45 56 25 C6 40 9D CE-31 56 30 C6 2E 9D C6 28   .EV%.@..1V0....(
003410   9D C5 ED 9D C5 C6 9D 85-BF 56 4F C5 BB 9D CD AD   .........VO.....
003420   56 42 C5 A7 9D 85 A0 56-17 C5 74 56 06 C5 91 56   VB.....V...V...V
003430   02 C5 90 56 03 C5 87 56-05 C5 54 56 02 C5 83 56   ...V...V...V...V
003440   03 C5 7A 56 05 CD 57 56-34 85 4F 56 54 CD 35 56   ..zV..WV4.OVT.5V
003450   55 CD 29 56 3E 85 1F 56-4A CD 37 56 34 84 FE 56   U.)V>..VJ..V4..V
003460   3A C4 FA 9F C4 F6 9F 84-DF 56 3B 84 D8 56 13 C4   :........V;..V..
003470   C3 9F C4 BF 9F C4 BE 56-06 C4 BE 56 02 C4 B7 56   .......V...V...V
003480   03 C4 AD 56 05 C4 AA 56-02 C4 A4 56 03 C4 9F 56   ...V...V...V...V
003490   05 CC 83 56 55 CC 77 56-34 CC 6D 56 41 CC 61 56   ...VU.wV4.mVA.aV
0034A0   24 CC 4F 56 36 CC 3A 56-35 CC 2E 56 53 E4 A0 1D   $.OV6.:V5..VS...
0034B0   03 01 A4 18 68 4C 05 6A-00 6A 05 9A 00 00 00 00   ....hL.j.j......
0034C0   83 C4 0C B8 00 00 BA 00-00 52 50 1E 68 7B 05 6A   .........RP.h{.j
0034D0   00 6A 06 9A 00 00 00 00-83 C4 0C B8 00 00 BA 00   .j..............
0034E0   00 52 50 1E 68 AA 05 6A-00 6A 07 9A 00 00 00 00   .RP.h..j.j......
0034F0   83 C4 0C B8 00 00 BA 00-00 52 50 1E 68 D9 05 6A   .........RP.h..j
003500   00 6A 08 9A 00 00 00 00-83 C4 0C B8 00 00 BA 00   .j..............
003510   00 52 50 1E 68 08 06 6A-00 6A 09 9A 00 00 00 00   .RP.h..j.j......
003520   83 C4 0C B8 00 00 BA 00-00 52 50 1E 68 37 06 6A   .........RP.h7.j
003530   00 6A 0A 9A 00 00 00 00-83 C4 0C B8 00 00 BA 00   .j..............
003540   00 52 50 1E 68 66 06 6A-00 6A 0B 9A 00 00 00 00   .RP.hf.j.j......
003550   83 C4 0C B8 00 00 BA 00-00 52 50 1E 68 95 06 6A   .........RP.h..j
003560   00 6A 0C 9A 00 00 00 00-83 C4 0C B8 00 00 BA 00   .j..............
003570   00 52 50 1E 68 C4 06 6A-00 6A 0D 9A 00 00 00 00   .RP.h..j.j......
003580   83 C4 0C B8 00 00 BA 00-00 52 50 1E 68 F3 06 6A   .........RP.h..j
003590   00 6A 0E 9A 00 00 00 00-83 C4 0C B8 00 00 BA 00   .j..............
0035A0   00 52 50 1E 68 22 07 6A-00 6A 0F 9A 00 00 00 00   .RP.h".j.j......
0035B0   83 C4 0C B8 00 00 BA 00-00 52 50 1E 68 51 07 6A   .........RP.hQ.j
0035C0   00 6A 10 9A 00 00 00 00-83 C4 0C B8 00 00 BA 00   .j..............
0035D0   00 52 50 1E 68 80 07 6A-00 6A 11 9A 00 00 00 00   .RP.h..j.j......
0035E0   83 C4 0C 1F C9 CB C8 00-00 00 1E B8 00 00 8E D8   ................
0035F0   83 7E 06 0B 7E 05 C7 46-06 0B 00 8B 5E 06 C1 E3   .~..~..F....^...
003600   02 8B 87 CA 07 8B 97 CC-07 1F C9 CB C8 00 00 00   ................
003610   1E B8 00 00 8E D8 83 7E-06 07 7E 05 C7 46 06 07   .......~..~..F..
003620   00 8B 5E 06 C1 E3 02 8B-87 0A 08 8B 97 0C 08 1F   ..^.............
003630   C9 CB C8 50 00 00 1E B8-00 00 8E D8 8B 46 06 0B   ...P.........F..
003640   C0 74 07 3D 01 00 74 38-EB 47 83 7E 08 00 75 14   .t.=..t8.G.~..u.
003650   FF 76 0A 1E 68 2A 08 8D-46 B0 16 50 9A 00 00 00   .v..h*..F..P....
003660   00 83 C4 0A 83 7E 08 01-75 27 FF 76 0A 1E 68 46   .....~..u'.v..hF
003670   08 8D 46 B0 16 50 9A 00-00 00 00 83 C4 0A EB 11   ..F..P..........
003680   1E 68 62 08 8D 46 B0 16-50 9A 00 00 00 00 83 C4   .hb..F..P.......
003690   08 8D 46 B0 16 50 6A 01-9A 00 00 00 00 83 C4 06   ..F..Pj.........
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0036A0   1F C9 CB 90 C6 12 02 00-57 56 1E B8 00 00 0E D8   ........WV......
0036B0   B8 6E 0B 89 46 F4 8C 5E-F6 9B DF 46 0A 9B DC 46   .n..F..^...F...F
0036C0   14 9A 00 00 00 00 89 46-F0 9B DF 46 0C 9B DC 46   .......F...F...F
0036D0   1C 9A 00 00 00 00 89 86-0E FE 2B 06 08 00 99 F7   ..........+.....
0036E0   7E 12 05 02 00 89 46 FC-8B 46 F0 2B 06 06 00 99   ~.....F..F.+....
0036F0   F7 7E 10 05 03 00 89 46-F8 9B DF 46 0A 9B DF 46   .~.....F...F...F
003700   10 9B DE F9 9B DC 46 14-9B D9 9E 08 FE 9B DF 46   ......F........F
003710   0C 9B DF 46 12 9B DE F9-9B DC 46 1C 9B D9 9E 00   ...F......F.....
003720   FE 9B D9 86 08 FE 9A 00-00 00 00 89 86 04 FE 9B   ................
003730   D9 86 00 FE 9A 00 00 00-00 89 86 FE FD 1E 68 70   ..............hp
003740   08 8D 86 10 FE 16 50 9A-00 00 00 00 83 C4 08 FF   ......P.........
003750   B6 04 FE 0E E8 00 00 83-C4 02 52 50 FF B6 FE FD   ..........RP....
003760   0E E8 00 00 83 C4 02 52-50 C4 5E 06 26 FF 77 06   .......RP.^.&.w.
003770   26 FF 77 04 1E 68 9D 08-8D 86 60 FE 16 50 9A 00   &.w..h....`..P..
003780   00 00 00 83 C4 14 FF 76-0E 1E 68 C6 08 8D 86 B0   .......v..h.....
003790   FE 16 50 9A 00 00 00 00-83 C4 0A FF 76 F0 C4 5E   ..P.........v..^
0037A0   06 26 FF 77 0A 26 FF 77-08 1E 68 F3 08 8D 86 00   .&.w.&.w..h.....
0037B0   FF 16 50 9A 00 00 00 00-83 C4 0E FF B6 0E FE C4   ..P.............
0037C0   5E 06 26 FF 77 02 26 FF-37 1E 68 1B 09 A8 9C 6D   ^.&.w.&.7.h....m
0037D0   01 C7 17 9D CF 00 56 0E-C6 F7 9D CE E0 56 0E C6   ......V......V..
0037E0   D7 9D CE CB 56 0E C6 C2-9D 86 AE 56 2F 86 A1 56   ....V......V/..V
0037F0   2D CE 94 56 0E C6 8B 9D-CE 81 56 51 C6 7B 56 05   -..V......VQ.{V.
003800   CE 73 56 51 C6 6D 56 05-C6 68 56 05 C6 64 56 05   .sVQ.mV..hV..dV.
003810   C6 61 56 05 C6 5D 56 05-C6 59 56 05 C6 54 56 05   .aV..]V..YV..TV.
003820   C6 50 56 05 C6 4D 56 05-C6 49 56 05 C6 45 56 05   .PV..MV..IV..EV.
003830   C6 39 9F C6 28 9F CE 1E-56 51 C6 19 56 05 C6 15   .9..(...VQ..V...
003840   56 05 CE 0E 56 51 C6 09-56 05 C6 05 56 05 C5 FD   V...VQ..V...V...
003850   9D C9 F8 9D CD E5 56 25-CD D6 56 0E C5 CE 9D CD   ......V%..V.....
003860   C3 56 0E C5 BB 9D CD A9-56 0E C5 A1 9D C9 84 9D   .V......V.......
003870   C5 79 9D C5 75 9D C9 5E-9D C5 53 9D C5 4F 9D C9   .y..u..^..S..O..
003880   38 9D CD 28 56 38 C5 21-9D C9 1B 56 10 C5 18 56   8..(V8.!...V...V
003890   10 CD 10 56 38 C5 09 9D-C9 03 56 10 C5 00 56 10   ...V8.....V...V.
0038A0   CC F8 56 38 C4 F1 9D C8-EB 56 10 C4 E8 56 10 CC   ..V8.....V...V..
0038B0   E0 56 38 C4 D9 9D C8 D3-56 10 C4 D0 56 10 CC C8   .V8.....V...V...
0038C0   56 38 C4 C1 9D C8 BB 56-10 C4 B8 56 10 CC B0 56   V8.....V...V...V
0038D0   38 C4 A9 9D C8 A3 56 10-C4 A0 56 10 CC 98 56 38   8.....V...V...V8
0038E0   C4 91 9D C8 8B 56 10 C4-88 56 10 CC 80 56 38 C4   .....V...V...V8.
0038F0   79 9D C8 73 56 10 C4 70-56 10 CC 68 56 38 C4 61   y..sV..pV..hV8.a
003900   9D C8 5B 56 10 C4 58 56-10 CC 50 56 38 C4 49 9D   ..[V..XV..PV8.I.
003910   C8 43 56 10 C4 40 56 10-CC 38 56 38 C4 31 9D C8   .CV..@V..8V8.1..
003920   2B 56 10 C4 28 56 10 CC-20 56 38 C4 19 9D C8 13   +V..(V.. V8.....
003930   56 10 C4 10 56 10 CC 08-56 38 C4 01 9D 81 A0 B5   V...V...V8......
003940   03 01 BD 1B 8D 86 50 FF-16 50 9A 00 00 00 00 83   ......P..P......
003950   C4 0E 1E 68 42 09 8D 46-A0 16 50 9A 00 00 00 00   ...hB..F..P.....
003960   83 C4 08 2B F6 8D 86 10-FE 89 86 F6 FD 8C 96 F8   ...+............
003970   FD FF B6 F8 FD FF B6 F6-FD 8D 44 0C 50 9A 00 00   ..........D.P...
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003980   00 00 83 C4 06 83 86 F6-FD 50 46 83 FE 06 7C E1   ..........PF...!.
003990   89 B6 06 FE 80 3E 04 00-00 74 18 9A 00 00 00 00   .....>...t......
0039A0   0B C0 75 0F 6A 49 6A 43-1E 68 6F 09 0E E8 00 00   ..u.jIjC.ho.....
0039B0   83 C4 08 80 3E 04 00 00-75 03 E9 6C 01 6A 01 1E   ....>...u..l.j..
0039C0   68 AA 09 9A 00 00 00 00-83 C4 06 89 86 0C FE 40   h..............@
0039D0   75 11 1E 68 AE 09 6A 01-9A 00 00 00 00 83 C4 06   u..h..j.........
0039E0   E9 3A 01 83 3E 6E 0A 00-75 03 E9 9E 00 1E 68 D9   .:..>n..u.....h.
0039F0   09 FF 76 26 FF 76 24 9A-00 00 00 00 83 C4 08 89   ..v&.v$.........
003A00   46 F2 1E 68 E6 09 03 46-24 8B 56 26 52 50 9A 00   F..h...F$.V&RP..
003A10   00 00 00 83 C4 08 01 46-F2 1E 68 F2 09 8B 46 F2   ........F..h...F.
003A20   03 46 24 8B 56 26 52 50-9A 00 00 00 00 83 C4 08   .F$.V&RP........
003A30   01 46 F2 1E 68 05 0A 8B-46 F2 03 46 24 8B 56 26   .F..h...F..F$.V&
003A40   52 50 9A 00 00 00 00 83-C4 08 01 46 F2 1E 68 16   RP..........F..h.
003A50   0A 8B 46 F2 03 46 24 8B-56 26 52 50 9A 00 00 00   ..F..F$.V&RP....
003A60   00 83 C4 08 01 46 F2 C4-7E 24 B9 FF FF 33 C0 F2   .....F..~$...3..
003A70   AE F7 D1 49 51 06 FF 76-24 FF B6 0C FE 9A 00 00   ...IQ..v$.......
003A80   00 00 83 C4 0E C7 06 6E-0A 00 00 E3 7E 2C 00 74   .......n....~..t
003A90   04 FF 06 6C 0A C4 5E 06-26 FF 77 0A 26 FF 77 08   ...l..^.&.w.&.w.
003AA0   26 FF 77 06 26 FF 77 04-FF B6 FE FD 0E E8 00 00   &.w.&.w.........
003AB0   83 C4 02 52 50 FF B6 04-FE 0E E8 00 00 83 C4 02   ...RP...........
003AC0   52 50 FF 76 F6 FF 76 F4-FF 36 6C 0A 1E 68 24 0A   RP.v..v..6l..h$.
003AD0   FF 76 26 FF 76 24 9A 00-00 00 00 83 C4 1E C4 5E   .v&.v$.........^
003AE0   06 26 FF 77 0A 26 FF 77-08 26 FF 77 06 26 FF 77   .&.w.&.w.&.w.&.w
003AF0   04 FF B6 FE FD 0E E8 00-00 83 C4 02 52 50 FF B6   ..............RP..
003B00   04 FE 0E E8 00 00 83 C4-02 52 50 1E 68 42 0A FF   ..........RP.hB..
003B10   76 2A FF 76 28 9A 00 00-00 00 83 C4 18 FF B6 0C   v*.v(...........
003B20   FE 9A 00 00 00 00 83 C4-02 8B 46 0C 03 46 0E 05   ...........F..F..
003B30   10 00 89 46 FA 3D EE 00-7E 0C 8B 46 0C 2B 46 0E   ...F.=..~..F.+F.
003B40   2D 06 00 89 46 FA 8B 46-0A 89 46 FE 3D 0C 00 7D   -...F..F..F.=..}
003B50   05 C7 46 FE 0C 00 81 7E-FE F4 00 7E 05 C7 46 FE   ..F....~...~..F.
003B60   F4 00 6A 00 6A 01 9A 00-00 00 00 83 C4 04 6A 00   ..j.j..........j.
003B70   9A 00 00 00 00 83 C4 02-C7 86 06 FE 06 00 8B 46   ...............F
003B80   06 8B 56 08 05 04 00 89-86 F6 FD 89 96 F8 FD BE   ..V.............
003B90   64 0A BF 5C 0A C7 86 F0-FD 54 0A C7 86 EE FD 04   d..\.....T......
003BA0   00 C4 9E F6 FD 26 8B 07-99 89 86 FA FD 89 96 FC   ......&.........
003BB0   FD 52 50 6A 01 6A 01 FF-34 6A 00 8B 05 03 46 FA   .RPj.j..4j....F.
003BC0   50 8B 9E F0 FD 8B 07 03-46 FE 50 6A 01 6A 00 9A   P.......F.Pj.j..
003BD0   00 00 00 00 83 C4 14 83-86 F6 FD 02 83 C6 02 83   ................
003BE0   C7 02 83 86 F0 FD 02 FF-8E EE FD 75 B4 1F 5E 5F   ...........u..^_
003BF0   C9 CB 90 C8 0C 00 00 1E-B8 00 00 8E D8 C7 46 FC   ..............F.
003C00   01 01 C7 46 F8 F1 00 C7-46 FA 00 00 C7 46 F4 00   ...F....F....F..
003C10   00 C7 46 F6 01 01 C7 46-FE 00 00 68 FE 00 9A 00   ..F....F...h....
003C20   00 00 00 83 C4 02 6A 00-6A 02 9A 00 00 00 00 83   ......j.j.......
003C30   C4 04 6A 00 9A 00 00 00-00 83 C4 02 6A 01 6A 00   ..j..........j.j.
003C40   6A 00 6A 00 6A 00 FF 76-0C FF 76 0A FF 76 08 FF   j.j.j..v..v..v..
003C50   76 06 6A 02 9A 00 00 00-00 83 C4 14 6A 00 9A 00   v.j.........j...
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003C60   00 00 00 83 C4 02 6A 01-6A 00 6A 00 68 01 01 6A   ......j.j.j.h..j
003C70   00 FF 76 0C FF 76 0A FF-76 08 FF 76 06 6A 03 9A   ..v..v..v..v.j..
003C80   00 00 00 00 83 C4 14 6A-00 9A 00 00 00 00 83 C4   .......j........
003C90   02 6A 01 6A 00 68 F1 00-68 01 01 6A 00 FF 76 0C   .j.j.h..h..j..v.
003CA0   FF 76 0A FF 76 08 FF 76-06 6A 01 9A 00 00 00 00   .v..v..v.j......
003CB0   83 C4 14 1F C9 CB 90 1E-B8 00 00 8E D8 6A 00 6A   .............j.j
003CC0   01 9A 00 00 00 00 83 C4-04 6A 00 9A 00 00 00 00   .........j......
003CD0   83 C4 02 6A 00 9A 00 00-00 00 83 C4 02 68 EF 00   ...j.........h..
003CE0   6A 00 9A 00 00 00 00 83-C4 04 68 F0 00 68 FF 01   j.........h..h..
003CF0   9A 00 00 00 00 5A 9C D3-00 CF AD 56 49 CF 9F 56   .....Z.....VI..V
003D00   48 CF 92 56 32 CF 88 56-1D CF 7E 56 3E CB 75 9D   H..V2..V..~V>.u.
003D10   CF 68 56 2B CF 46 56 53-CF 3C 56 2B CF 1B 56 53   .hV+.FVS.<V+..VS
003D20   CF 11 56 2B CE F1 56 53-CE E7 56 3E CE DB 56 55   ..V+..VS..V>..VU
003D30   CA B5 9D CE 8C 56 33 C6-55 9D C6 4F 9D C6 4C 9D   .....V3.U..O..L.
003D40   CE 2D 56 1D CE 23 56 3E-CD DE 56 1F CD D2 56 0E   .-V..#V>..V...V.
003D50   C5 C9 9D 85 C0 56 2D 85-B3 56 2F CD 93 56 0E C5   .....V-..V/..V..
003D60   8A 9D C5 86 9D 85 77 56-2D 85 6A 56 2F C5 4F 9D   ......wV-.jV/.O.
003D70   C5 43 9D CD 3A 56 3F CD-19 56 0E C5 0B 9D CC FF   .C..:V?..V......
003D80   56 0E C4 F1 9D CC E5 56-0E C4 D7 9D CC CB 56 0E   V......V......V.
003D90   C4 C0 9D CC B4 56 0E C4-AB 9D C4 A1 9D CC 95 56   .....V.........V
003DA0   25 C4 90 9D CC 80 56 30-C4 7D 9D C4 71 9D 84 6A   %.....V0.}..q..j
003DB0   56 4F C4 66 9D CC 58 56-42 C4 52 9D CC 3A 56 22   VO.f..XVB.R..:V"
003DC0   CC 18 56 0E C4 10 9D CC-07 56 0E 8A A0 B6 03 01   ..V......V......
003DD0   6E 1F 83 C4 04 68 DF 01-68 FF 00 9A 00 00 00 00   n....h..h.......
003DE0   83 C4 04 6A 00 68 00 01-9A 00 00 00 00 83 C4 04   ...j.h..........
003DF0   1F C5 1E B8 00 00 8E D8-1E 68 70 0A 6A 07 6A 07   .........hp.j.j.
003E00   6A 01 6A 0E 6A 03 6A 01-6A 00 9A 00 00 00 00 83   j.j.j.j.j.......
003E10   C4 12 1E 68 78 0A 6A 0A-6A 0A 6A 02 6A 0E 68 FD   ...hx.j.j.j.j.h.
003E20   01 6A 01 6A 00 9A 00 00-00 00 83 C4 12 1E 68 83   .j.j..........h.
003E30   0A 6A 0A 6A 0A 6A 01 68-FF 00 6A 03 6A 01 6A 00   .j.j.j.h..j.j.j.
003E40   9A 00 00 00 00 83 C4 12-1E 68 8E 0A 6A 08 6A 08   .........h..j.j.
003E50   6A 02 68 FF 00 68 FD 01-6A 01 6A 00 9A 00 00 00   j.h..h..j.j.....
003E60   00 83 C4 12 1F CB C8 12-00 00 57 56 1E B8 00 00   ..........WV....
003E70   8E D8 8B 46 0A 89 46 FE-8B 46 0E 89 46 F2 C7 46   ...F..F..F..F..F
003E80   F4 00 00 8B 46 10 39 46-F2 7F 6A 8B 46 FE 89 46   ....F.9F.j.F..F
003E90   F0 8B 46 10 2B 46 0E 40-89 46 EE 01 46 F4 8B 76   ..F.+F.@.F..F..v
003EA0   F2 8B 46 F0 89 46 FA 56-0E E8 00 00 83 C4 02 8B   ..F..F.V........
003EB0   D8 8E C2 57 8B FB B9 FF-FF 33 C0 F2 AE F7 D1 49   ...W.....3.....I
003EC0   5F 8B F9 56 0E E8 00 00-83 C4 02 52 50 57 57 6A   _..V.......RPWWj
003ED0   01 68 F3 00 FF 76 FA 6A-01 6A 00 9A 00 00 00 00   .h...v.j.j......
003EE0   83 C4 12 46 8B 46 06 01-46 F0 3B 76 10 7E B2 89   ...F.F..F.;v.~..
003EF0   7E F8 89 76 F2 8B 46 0A-80 C4 01 89 46 FE 8B 46   ~..v..F.....F..F
003F00   0E 89 46 F2 C7 46 F4 00-00 8B 46 10 39 46 F2 7F   ..F..F....F.9F.
003F10   6A 8B 46 FE 89 46 EE 8B-46 10 2B 46 0E 40 89 46   j.F..F..F.+F.@.F
003F20   F0 01 46 F4 8B 76 F2 8B-46 EE 89 46 FA 56 0E E8   ..F..v..F..F.V..
003F30   00 00 83 C4 02 8B D8 8E-C2 57 8B FB B9 FF FF 33   .........W.....3
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003F40   C0 F2 AE F7 D1 49 5F 8B-F9 56 0E E8 00 00 83 C4   .....I_..V......
003F50   02 52 50 57 57 6A 01 68-F3 00 FF 76 FA 6A 01 6A   .RPWWj.h...v.j.j
003F60   00 9A 00 00 00 00 83 C4-12 46 8B 46 06 01 46 EE   ..........F.F..F.
003F70   3B 76 10 7E B2 89 7E F8-89 76 F2 8B 46 0C 05 F7   ;v.~..~..v..F...
003F80   00 89 46 FC 8B 46 12 89-46 F2 C7 46 F4 00 00 8B   ..F..F..F..F....
003F90   46 14 39 46 F2 7F 6A 8B-46 FC 89 46 EE 8B 46 14   F.9F.j.F..F..F.
003FA0   2B 46 12 40 89 46 F0 01-46 F4 8B 76 F2 8B 46 EE   +F.@.F..F..v..F.
003FB0   89 46 F6 56 0E E8 00 00-83 C4 02 8B D8 8E C2 57   .F.V...........W
003FC0   8B FB B9 FF FF 33 C0 F2-AE F7 D1 49 5F 8B F9 56   ......3.....I_..V
003FD0   0E E8 00 00 83 C4 02 52-50 57 57 6A 01 FF 76 FA   ........RPWWj..v.
003FE0   68 FC 00 6A 01 6A 00 9A-00 00 00 00 83 C4 12 46   h..j.j..........F
003FF0   8B 46 08 01 46 EE 3B 76-14 7E B2 89 7E F8 89 76   .F..F.;v.~..~..v
004000   F2 8B 46 0C 89 46 FC 8B-46 12 89 46 F2 C7 46 F4   ..F..F..F..F..F.
004010   00 00 8B 46 14 39 46 F2-7F 6A 8B 46 FC 89 46 EE   ...F.9F.j.F..F.
004020   89 46 14 2B 46 12 40 89-46 F0 01 46 F4 8B 76 F2   .F.+F.@.F..F..v.
004030   8B 46 EE 89 46 F6 56 0E-E8 00 00 83 C4 02 8B D8   .F..F.V.........
004040   8E C2 57 8B FB 89 FF FF-33 C0 F2 AE F7 D1 49 5F   ..W.....3.....I_
004050   8B F9 56 0E E8 00 00 83-C4 02 52 50 57 57 6A 01   ..V.......RPWWj.
004060   FF 76 FA 68 FC 00 6A 01-6A 00 9A 00 00 00 00 83   .v.h..j.j.......
004070   C4 12 46 8B 46 08 01 46-EE 3B 76 14 7E B2 89 7E   ..F..F..F.;v.~..~
004080   F8 89 76 F2 1F 5E 5F C9-CB 90 C8 00 00 00 57 56   ..v..^_.......WV
004090   1E B8 00 00 8E D8 FF 76-08 6A 01 9A 00 00 00 00   .......v.j......
0040A0   83 C4 04 FF 76 06 9A 00-00 00 00 83 C4 02 83 7E   ....v..........~
0040B0   06 01 75 74 FF 36 14 00-FF 36 12 00 9A 00 00 00   ..ut.6...6......
0040C0   00 83 C4 04 FF 36 16 00-9A 00 00 00 00 83 C4 02   .....6..........
0040D0   8B 36 12 00 81 C6 01 01-FF 36 14 00 56 9A 00 00   .6.......6..V...
0040E0   00 00 83 C4 04 FF 36 16-00 9A 00 00 00 00 83 C4   ......6.........
0040F0   02 8B 3E 14 00 81 C7 F1-00 57 FF 36 12 00 9A 00   ..>......W.6....
004100   00 00 00 83 C4 04 FF 36-16 00 9A 00 00 00 00 83   .......6........
004110   C4 02 57 56 9A 00 00 00-00 83 C4 04 FF 36 16 00   ..WV.........6..
004120   9A 00 00 00 00 83 C4 02-FF 76 0E FF 76 0C 9A 00   .........v..v...
004130   00 00 00 83 C4 04 FF 76-0A 9A 00 00 00 00 83 C4   .......v........
004140   02 8B 76 0C 81 C6 01 01-FF 76 0E 56 9A 00 00 00   ..v......v.V....
004150   00 83 C4 04 FF 76 0A 9A-00 00 00 00 83 C4 02 8B   .....v..........
004160   7E 0E 81 C7 F1 00 57 FF-76 0C 9A 00 00 00 00 83   ~.....W.v.......
004170   C4 04 FF 76 0A 9A 00 00-00 00 83 C4 02 57 56 9A   ...v..........WV.
004180   00 00 00 00 8F 9C C0 00-CF AE 56 48 CF A4 56 29   ..........VH..V)
004190   CF 99 56 48 CF 86 56 29-CF 7B 56 48 CF 68 56 29   ..VH..V).{VH.hV)
0041A0   CF 5D 56 48 CF 4F 56 29-C7 4C 9F CF 43 56 48 CF   .]VH.OV).L..CVH.
0041B0   39 56 29 C7 36 9F CF 2D-56 48 C7 2A 9F C7 21 9F   9V).6..-VH.*..!.
0041C0   CF 18 56 29 C7 15 9F CF-0C 56 48 C7 08 9F C7 00   ..V).....VH.....
0041D0   9F CE F7 56 29 C6 F4 9F-CE EB 56 48 C6 E8 9F C6   ...V).....VH....
0041E0   E4 9F CE D5 56 1D CE CA-56 3E CA C0 9D CE 99 56   ....V...V>.....V
0041F0   21 86 83 56 2F 86 67 56-2F CE 16 56 21 86 00 56   !..V/.gV/..V!..V
004200   2F 85 E4 56 2F CD 90 56-21 85 7A 56 2D 85 5E 56   /..V/..V!.zV-.^V
004210   2D CD 0A 56 21 84 F4 56-2D 84 D8 56 2D C8 9C 9D   -..V!..V-..V-...
```

```
004220  CC 8B 56 4B C4 78 9D CC-6F 56 4B C4 5D 9D CC 54   ..VK.x..oVK.]..T
004230  56 4B C4 42 9D CC 39 56-4B C4 28 9D C8 22 9D CC   VK.B..9VK.(.."..
004240  17 56 49 CC 0A 56 48 CF-A0 9C 00 01 20 23 83 C4   .VI..VH..... #..
004250  04 FF 76 0A 9A 00 00 00-00 83 C4 02 8B 46 0A A3   ..v..........F..
004260  16 00 8B 46 0C A3 12 00-8B 46 0E A3 14 00 1F 5E   ...F.....F.....^
004270  5F C9 CB 90 C8 00 00 00-1E B8 00 00 8E D8 FF 76   _..............v
004280  08 6A 01 9A 00 00 00 00-83 C4 04 6A 01 9A 00 00   .j.........j....
004290  00 00 83 C4 02 83 7E 06-01 75 1C FF 36 1A 00 FF   ......^..u..6...
0042A0  36 18 00 9A 00 00 00 00-83 C4 04 FF 36 1C 00 9A   6...........6...
0042B0  00 00 00 00 83 C4 02 FF-76 0E FF 76 0C 9A 00 00   ........v..v....
0042C0  00 00 83 C4 04 FF 76 06-9A 00 00 00 00 83 C4 02   ......v.........
0042D0  8B 46 0A A3 1C 00 8B 46-0C A3 18 00 8B 46 0E A3   .F.....F.....F..
0042E0  1A 00 1F C9 CB 90 4E 9C-3B 00 C4 92 9F C4 8C 9F   ......N.:.......
0042F0  C4 86 9F CC 7B 56 29 CC-70 56 48 CC 62 56 29 C4   ....{V).pVH.bV).
004300  5F 9F CC 56 56 48 C4 53-9F C4 4F 9F CC 40 56 1D   _..VVH.S..O..@V.
004310  CC 36 56 3E C8 2C 9D C4-1E 9F C4 18 9F C4 12 9F   .6V>.,..........
004320  CC 07 56 29 BC 8A 02 00-00 74                     ..V).....t
004320  CC 07 56 29 BC 8A 02 00-00 74                     ..V).....t
```

```
0005C0   7E 07 C7 46 [illegible] FF 00 EB-0B 83 7E 94 00 7D 05 C7   ~..F......~..}..
0005D0   46 94 00 00 8B 46 F6 03-46 F0 3B 46 08 7D 05 C7   F....F..F.;F.}..
0005E0   46 94 7F 00 C4 5E F2 8A-46 94 26 88 07 83 46 F8   F...^..F.&...F.
0005F0   02 83 46 F2 02 FF 4E 8E-75 92 80 46 8D 04 46 81   ..F...N.u..F..F.
000600   FE DF 01 7F 03 E9 5D FF-6A 00 9A 00 00 00 00 83   .....].j.......
000610   C4 02 6A 01 6A 02 9A 00-00 00 00 83 C4 04 6A 00   ..j.j.........j.
000620   6A 03 6A FF 6A 01 9A 00-00 00 00 83 C4 08 6A 0E   j.j.j.........j.
000630   6A 03 6A 01 6A 01 9A 00-00 00 00 83 C4 08 6A 00   j.j.j.........j.
000640   6A 01 6A FF 6A 02 9A 00-00 00 00 83 C4 08 6A 08   j.j.j.........j.
000650   6A 01 6A 01 6A 02 9A 00-00 00 00 83 C4 08 6A 0C   j.j.j.........j.
000660   6A 03 6A FF 6A 03 9A 00-00 00 00 83 C4 08 9A 00   j.j.j...........
000670   00 00 0C 99 89 46 76 [illegible]-56 98 0E 01 [illegible] 0E 3E [illegible]   .....F..V...>.+.
000680   89 46 [illegible] 89 46 96 FF 76-[illegible] [illegible] 76 [illegible] 9A 0C 00 00   .F..F...........
000690   00 33 C4 04 89 46 9A 89-56 9C 0B 00 75 1[illegible] FF 76   ......F..V....u..V
0006A0   [illegible] [illegible] 76 96 1E 68 CB 00-9A 00 00 0C 00 83 C4 08   ................
0006B0   2E C0 1F 3E 5F C9 CB FF-76 08 FF 76 [illegible] [illegible] 00 00   +..'_...V..V....
0006C0   00 00 83 C4 04 FF 76 9C-FF 76 94 9A 00 00 00 00   ......V..V......
0006D0   83 C4 04 FF 76 9C FF 76-9A 9A 00 [illegible] 00 00 83 C4   ....V..V........
0006E0   04 0E E8 00 00 9A 00 00-00 00 9A 00 00 00 00 9A   ................
0006F0   00 00 00 00 8B 01 00 1F-5E 5F C9 [illegible] [illegible] [illegible] [illegible] D9   ........^_......
000700   00 CE F5 56 04 CE F0 56-03 CE E6 56 02 86 E8 56   ...V...V...V...V
000710   0A CE DF 56 0B CE D1 56-05 CE C3 56 09 CE 4E 56   ...V...V...V...V
000720   19 C6 AB 9D CE 92 56 0E-CE 74 56 18 CE 6C 56 14   .......V..tV..lV.
000730   CE 5C 56 15 CE 4C 56 14-CE 3C 56 15 CE 2C 56 14   .\V..LV..<V..,V.
000740   CE 1C 56 16 CE 10 56 13-CD 74 56 17 CD 5E 56 16   ..V...V..tV..^V.
000750   ED 52 56 13 CD 43 56 14-CD 33 56 15 CD 23 56 14   .RV..CV..3V..#V.
000760   CD 13 56 13 CD 09 56 0F-CC FA 56 1A C4 F2 9D 84   ..V...V...V.....
000770   E6 56 08 CC E0 56 04 CC-D6 56 03 CC D6 56 02 CC   .V...V...V...V..
000780   CE 56 10 C4 CB 9D C8 C0-9D C4 B1 9D CC A8 56 07   .V............V.
000790   C4 A5 9F C4 9E 9D C8 98-9D C4 90 9D CC 87 56 11   ..............V.
0007A0   C4 80 9D C4 7C 9F CC 73-56 11 C4 6C 9D C4 68 9F   ....|..sV..l..h.
0007B0   CC 5F 56 11 C4 58 9D C4-54 9F C4 4E 9F CC 45 56   ._V..X..T..N..EV
0007C0   1B C4 42 9F CC 39 56 0C-C4 36 9F C8 28 56 12 C4   ..B..9V..6..(V..
0007D0   25 56 12 C8 20 9D C8 06-9D AB 8A 02 00 00 74      %V.. .........t
```

0007D0   25 56 12 C8 20 9D C8 06-9D AB 8A 02 00 00 74   %V.. ....t

```
000000  80 08 00 06 70 63 68 67-2E 63 3F 88 07 00 00 00   ....pchg.c?.....
000010  4D 53 20 43 6E 88 09 00-00 9F 4C 4C 49 42 43 45   MS Cn.....LLIBCE
000020  25 88 06 00 00 9D 32 6C-4F E8 88 06 00 00 A1 01   %.....210.......
000030  43 56 37 96 32 00 00 06-44 47 52 4F 55 50 09 50   CV7.2...DGROUP.P
000040  43 48 47 5F 54 45 58 54-04 43 4F 44 45 05 5F 44   CHG_TEXT.CODE._D
000050  41 54 41 04 44 41 54 41-05 43 4F 4E 53 54 04 5F   ATA.DATA.CONST._
000060  42 53 53 03 42 53 53 15-98 07 00 48 02 03 03 04   BSS.BSS....H....
000070  01 0C 98 07 00 48 40 01-05 06 01 CC 98 07 00 48   .....H@........H
000080  00 00 07 07 01 0A 98 07-00 48 46 00 08 09 01 C1   ..........HF.....
000090  9A 08 00 01 FF 03 FF 04-FF 02 56 9C 0D 00 00 03   ..........V.....
0000A0  01 02 02 01 03 04 40 01-45 01 C0 3C 5E 00 04 5F   .......@.E.....
0000B0  5F 61 63 72 74 75 73 65-64 00 12 5F 63 6C 65 61   _acrtused.._clea
0000C0  72 5F 61 63 74 69 6F 6E-5F 61 72 65 61 00 10 5F   r_action_area.._
0000D0  63 6C 65 61 72 5F 6D 65-6E 75 5F 61 72 65 61 00   clear_menu_area.
0000E0  13 5F 63 6C 65 61 72 5F-6D 65 73 73 61 67 65 5F   ._clear_message_
0000F0  61 72 65 61 00 14 5F 77-72 69 74 65 5F 61 6C 6C   area.._write_all
000100  5F 73 74 61 6E 64 61 72-64 73 00 16 9A 08 00 08   _standards......
000110  62 75 69 6C 64 70 74 72-00 D3 8C 0C 00 09 5F 75   buildptr......_u
000120  6E 73 65 74 5F 77 6E 00-8D 84 1F 00 16 73 68 6F   nset_wn......sho
000130  77 5F 69 64 65 6E 74 69-66 69 65 72 5F 77 69 6E   w_identifier_win
000140  64 6F 77 00 E3 8C 03 01-10 5F 70 75 74 5F 70 63   dow......_put_pc
000150  68 67 5F 76 61 6C 75 65-73 00 0F 5F 72 65 6D 6F   hg_values.._remo
000160  76 65 5F 77 69 6E 64 6F-77 73 00 15 5F 63 6C 6F   ve_windows.._clo
000170  73 65 5F 73 74 61 6E 64-61 72 64 73 5F 66 69 6C   se_standards_fil
000180  65 00 08 5F 64 65 66 73-5F 77 6E 00 05 5F 70 63   e.._defs_wn.._pc
000190  68 67 00 0E 5F 67 65 74-5F 73 74 61 6E 64 61 72   hg.._get_standar
0001A0  64 73 00 0C 5F 73 65 74-5F 6D 65 73 73 61 67 65   ds.._set_message
0001B0  00 11 5F 73 65 74 5F 73-63 72 65 65 6E 5F 74 69   .._set_screen_ti
0001C0  74 6C 65 00 07 5F 76 5F-70 6C 73 74 00 08 5F 62   tle.._v_plst.._b
0001D0  64 72 5F 64 6C 6E 00 0B-5F 69 6D 5F 6F 75 74 6D   dr_dln.._im_outm
0001E0  6F 64 65 00 0B 5F 69 6D-5F 6F 75 74 70 61 74 68   ode.._im_outpath
0001F0  00 0E 5F 69 6D 5F 69 6E-74 65 72 69 6D 61 67 65   .._im_interimage
000200  00 0A 5F 69 6D 5F 6F 70-6D 6F 64 65 00 0A 5F 69   .._im_opmode.._i
000210  6D 5F 63 70 75 77 69 6E-00 13 5F 67 65 74 5F 65   m_cpuwin.._get_e
000220  78 70 65 72 69 6D 65 6E-74 5F 6B 65 79 00 07 5F   xperiment_key.._
000230  65 72 72 6D 73 67 00 08-5F 73 70 72 69 6E 74 66   errmsg.._sprintf
000240  00 07 5F 73 65 74 5F 77-6E 00 82 B6 29 00 00 01   .._set_wn...)...
000250  08 62 75 69 6C 64 70 74-72 00 00 00 16 73 68 6F   .buildptr....sho
000260  77 5F 69 64 65 6E 74 69-66 69 65 72 5F 77 69 6E   w_identifier_win
000270  64 6F 77 1E 00 00 44 90-1F 00 00 01 0F 5F 72 65   dow...D......_re
000280  6D 6F 76 65 5F 77 69 6E-64 6F 77 73 96 00 00 05   move_windows....
000290  5F 70 63 68 67 B8 00 00-96 88 04 00 00 A2 01 D1   _pchg...........
0002A0  A0 02 01 02 02 00 20 20-20 20 20 20 20 20 20 20   ......
0002B0  20 50 20 20 43 20 20 48-20 20 47 20 20 20 20 20    P  C  H  G
0002C0  20 20 20 20 20 20 20 20-00 43 61 6C 63 75 6C 61           .Calcula
0002D0  74 69 6E 67 20 70 65 72-63 65 6E 74 20 63 68 61   ting percent cha
```

MODULE 4

```
0002E0  6E 67 65 20 69 6D 61 67-65 20 20 00 75 73 69 6E  nge image  .usin
0002F0  67 20 69 6E 74 65 67 65-72 20 6E 75 6D 62 65 72  g integer number
000300  20 61 72 69 74 68 6D 65-74 69 63 2E 20 20 00 42   arithmetic.  .B
000310  69 6F 6C 6F 67 69 63 61-6C 20 56 69 73 69 6F 6E  iological Vision
000320  20 20 20 50 43 48 47 20-2D 20 50 65 72 63 65 6E     PCHG - Percen
000330  74 20 63 68 61 6E 67 65-20 62 65 74 77 65 65 6E  t change between
000340  20 32 20 69 6D 61 67 65-73 00 53 63 61 6C 65 20   2 images.Scale
000350  3D 20 25 64 20 20 20 43-6C 69 70 20 3D 20 25 64  = %d   Clip = %d
000360  20 20 20 4F 66 66 73 65-74 20 3D 20 25 64 00 50     Offset = %d.P
000370  43 48 47 3A 20 43 61 6E-27 74 20 61 63 63 65 73  CHG: Can't acces
000380  73 20 73 74 61 6E 64 61-72 64 73 20 69 6E 66 6F  s standards info
000390  72 6D 61 74 69 6F 6E 20-66 6F 72 20 6B 65 79 20  rmation for key
0003A0  25 6C 64 00 C9 A0 06 00-02 00 00 00 00 58 A0 44  %ld..........X.D
0003B0  00 02 00 01 43 6F 70 79-72 69 67 68 74 20 28 63  ....Copyright (c
0003C0  29 20 31 39 38 37 2C 20-42 69 6F 6C 6F 67 69 63  ) 1987, Biologic
0003D0  61 6C 20 56 69 73 69 6F-6E 20 49 6E 63 2E 20 20  al Vision Inc.
0003E0  41 6C 6C 20 72 69 67 68-74 73 20 72 65 73 65 72  All rights reser
0003F0  76 65 64 00 C6 40 06 03-01 00 00 C8 00 00 00 1E  ved.............
000400  B8 00 00 8E D8 C4 5E 06-8B 46 0A 26 89 47 02 8B  ........F.&.G..
000410  46 0C 26 8F 07 1F C9 CB-90 1E B8 00 00 8E D8 B8  F.&.............
000420  00 00 8A 00 00 52 50 6A-26 6A 05 6A 04 6A 03 1E  .....RPj&j.j.j..
000430  68 00 00 9A 00 00 00 00-83 C4 10 1E 68 00 00 9A  h...........h...
000440  00 00 00 00 83 C4 04 C7-06 42 00 01 00 1E 68 00  .........B....h.
000450  00 1E 68 02 00 6A 01 6A-01 9A 00 00 00 00 83 C4  ..h..j.j........
000460  0C 1E 68 00 00 1E 68 25-00 6A 01 6A 02 9A 00 00  ..h...h%.j.j....
000470  00 00 83 C4 0C 1E 68 00-00 1E 68 48 00 6A 01 6A  ......h...hH.j.j
000480  03 9A 00 00 00 00 83 C4-0C C7 06 00 00 01 00 1F  ................
000490  CB 1E B8 00 00 8E D8 83-3E 00 00 00 74 0C 1E 68  ........>...t..h
0004A0  00 00 9A 00 00 00 00 83-C4 04 C7 06 00 00 00 00  ................
0004B0  1F CB 90 C8 74 00 00 57-56 1E B8 00 00 8E D8 C7  ....t..WV.......
0004C0  46 FE 7F 00 1E 68 6B 00-9A 00 00 00 00 83 C4 04  F...hk..........
0004D0  9A 00 00 00 00 9A 00 00-00 00 9A 00 00 00 00 0E  ................
0004E0  E8 00 00 6A 7F FF 76 08-FF 76 06 1E 68 A6 00 8D  ...j.v..v..h...
0004F0  46 A0 16 50 9A 00 00 00-00 83 C4 0E 8D 46 A0 16  F..P.........F..
000500  50 6A 01 9A 00 00 00 00-83 C4 06 6A 01 9A 00 00  Pj.........j....
000510  00 00 83 C4 02 6A 00 6A-02 6A FF 6A 01 9A 00 00  .....j.j.j.j....
000520  00 00 83 C4 08 6A 08 6A-02 6A 01 6A 01 9A 00 00  .....j.j.j.j....
000530  00 00 83 C4 08 6A 00 6A-00 6A FF 6A 01 9A 00 00  .....j.j.j.j....
000540  00 00 83 C4 08 C7 46 FA-00 D0 6A 01 9A 00 00 00  ......F...j.....
000550  00 83 C4 02 6A 04 6A 00-9A 00 00 00 00 83 C4 04  ....j.j.........
000560  2B F6 89 76 8C 8B C6 C1-F8 06 89 46 92 50 9A 00  +..v.......F.P..
000570  00 00 00 83 C4 02 8B 46-8C 89 46 F8 8B 56 FA 40  .......F..F..V.@
000580  89 46 F2 89 56 F4 BF 00-02 89 7E 8E C4 5E F8 26  .F..V.....~..^.&
000590  8A 07 98 89 46 F6 C4 5E-F2 26 8A 07 98 89 46 F0  ....F..^.&....F.
0005A0  2B 46 F6 F7 6E 06 99 8B-4E F6 3B 4E F0 7E 03 8B  +F..n...N.;N.~..
0005B0  4E F0 80 C9 01 F7 F9 05-7F 00 89 46 94 3D FF 00  N.........F.=..
```

```
000E60  BA 00 20 C7 C4 C4 C4 C4-C4 C4 C4 C4 C4 C4 C4 C4  ................
000E70  C4 C5 C4 C4 C4 C4 C4 C4-C4 C4 C4 C4 C4 C4 C4 B3  ................
000E80  20 52 61 64 69 75 73 3D-20 25 33 64 20 BA 00 20   Radius= %3d ..
000E90  BA 20 20 25 36 64 20 20-20 20 20 B3 20 20 25 36  .  %6d     .  %6
000EA0  64 25 25 20 20 20 20 B3-20 58 20 20 20 20 20 3D  d%%    . X     =
000EB0  20 25 33 64 20 BA 00 20-BA 20 20 20 20 28 25 36   %3d .. .    (%6
000EC0  64 29 20 B3 20 20 20 28-25 36 64 29 20 20 B3 20  d) .   (%6d)  .
000ED0  59 20 20 20 20 20 3D 20-25 33 64 20 BA 00 20 C8  Y     = %3d .. .
000EE0  CD CD CD CD CD CD CD CD-CD CD CD CD CD CF CD CD  ................
000EF0  CD CD CD CD CD CD CD CD-CD CD CD CF CD CD CD CD  ................
000F00  CD CD CD CD CD CD CD CD-CD BC 00 43 68 65 63 6B  ...........Check
000F10  20 70 72 69 6E 74 65 72-20 73 74 61 74 75 73 2C   printer status,
000F20  20 70 72 65 73 73 20 49-20 74 6F 20 69 67 6E 6F   press I to igno
000F30  72 65 20 69 74 2C 20 43-20 74 6F 20 63 6F 6E 74  re it, C to cont
000F40  69 6E 75 65 2E 00 50 52-4E 00 2A 2A 2A 2A 20 43  inue..PRN.**** C
000F50  61 6E 20 6E 6F 74 20 6F-70 65 6E 20 64 65 76 69  an not open devi
000F60  63 65 20 4C 69 6E 65 20-50 72 69 6E 74 65 72 20  ce Line Printer
000F70  2A 2A 2A 2A 00 20 20 20-20 50 4F 53 49 54 49 4F  ****.    POSITIO
000F80  4E 00 20 20 20 20 43 4F-4E 54 52 4F 4C 00 20 20  N.    CONTROL.
000F90  20 20 20 20 20 20 45 58-50 45 52 49 4D 45 4E 54        EXPERIMENT
000FA0  00 20 20 20 20 20 20 44-49 46 46 45 52 45 4E 43  .      DIFFERENC
000FB0  45 00 20 20 20 20 25 25-43 48 41 4E 47 45 0A 00  E.    %%CHANGE..
000FC0  25 32 64 25 73 20 20 20-25 73 2C 25 73 25 31 31  %2d%s   %s,%s%11
000FD0  64 25 31 36 64 25 31 36-64 25 31 33 64 00 25 73  d%16d%16d%13d.%s
000FE0  20 25 73 25 34 64 25 34-64 25 35 64 25 35 64 00   %s%4d%4d%5d%5d.
000FF0  4B A0 2B 00 02 70 0A 43-4F 4E 54 52 4F 4C 00 45  K.+..p.CONTROL.E
001000  58 50 45 52 49 4D 45 4E-54 00 44 49 46 46 45 52  XPERIMENT.DIFFER
001010  45 4E 43 45 00 25 20 43-48 41 4E 47 45 00 E1 A0  ENCE.% CHANGE...
001020  0A 00 02 00 00 00 00 00-00 01 00 53 A0 06 00 02  ...........S....
001030  D4 00 FF FF 86 A0 C2 00-02 3A 03 43 6F 70 79 72  .........:.Copyr
001040  69 67 68 74 20 28 63 29-20 31 39 38 39 2C 20 42  ight (c) 1989, B
001050  69 6F 6C 6F 67 69 63 61-6C 20 56 69 73 69 6F 6E  iological Vision
001060  20 49 6E 63 2E 20 20 41-6C 6C 20 72 69 67 68 74   Inc.  All right
001070  73 20 72 65 73 65 72 76-65 64 00 00 00 00 00 00  s reserved......
001080  00 0C 00 00 00 15 00 00-00 25 00 00 00 3F 00 00  .........%...?..
001090  00 61 00 00 00 81 00 00-00 B1 00 00 00 DD 00 00  .a..............
0010A0  00 15 01 00 00 5D 01 00-00 9F 01 00 00 E9 01 00  .....]..........
0010B0  00 39 02 00 00 91 02 00-00 ED 02 00 00 4D 03 00  .9...........M..
0010C0  00 BD 03 00 00 31 04 00-00 A9 04 00 00 21 05 00  .....1.......!..
0010D0  00 A1 05 00 00 2D 06 00-00 C5 06 00 00 55 07 00  .....-.......U..
0010E0  00 E9 07 00 00 A1 08 00-00 41 09 00 00 F9 09 00  .........A......
0010F0  00 A5 0A 00 00 5D 0B 00-00 48 A0 34 00 02 CA 07  .....]...H.4....
001100  AF 07 00 00 B1 07 00 00-B3 07 00 00 B5 07 00 00  ................
001110  B7 07 00 00 B9 07 00 00-BB 07 00 00 BD 07 00 00  ................
001120  BF 07 00 00 C1 07 00 00-C4 07 00 00 C7 07 00 00  ................
001130  4A 9C 25 00 CC 2C 9D CC-28 9D CC 24 9D CC 20 9D  J.%..,..(..$.. .
```

```
001140  CC 1C 9D CC 18 9D CC 14-9D CC 10 9D CC 0C 9D CC   ................
001150  08 9D CC 04 9D CC 00 9D-4B A0 24 00 02 0A 08 FA   ........K.$.....
001160  07 00 00 FC 07 00 00 FE-07 00 00 00 08 00 00 02   ................
001170  08 00 00 04 08 00 00 06-08 00 00 08 08 00 00 E3   ................
001180  9C 19 00 CC 1C 9D CC 18-9D CC 14 9D CC 10 9D CC   ................
001190  0C 9D CC 08 9D CC 04 9D-CC 00 9D 93 A0 20 00 02   .............. ..
0011A0  54 0A 00 00 00 01 00 00-00 01 00 00 00 00 F0 00   T...............
0011B0  F0 00 00 00 00 00 00 00-03 00 01 00 01 00 F9 A0   ................
0011C0  06 00 02 98 0A 01 00 B5-A0 9E 00 01 00 00 C8 08   ................
0011D0  00 00 57 56 1E B8 00 00-8E D8 EB 05 9A 00 00 00   ..WV............
0011E0  00 9A 00 00 00 00 0B C0-75 F2 FF 76 06 FF 76 06   ........u..v..v.
0011F0  9A 00 00 00 00 83 C4 04-2B F6 2E FF 8A 46 0C 98   ........+.+..F..
001200  89 46 FA 8A 46 0A 98 89-46 F8 9A 00 00 00 00 8B   .F..F...F.......
001210  F0 F6 84 01 00 02 74 06-8D 44 E0 EB 03 90 8D C6   ......t..D......
001220  8B F0 3B 76 F8 74 05 3B-76 FA 75 03 BF 01 00 0B   ..;v.t.;v.u.....
001230  FF 74 D7 89 7E FC 89 76-FE 9A 00 00 00 00 8A 46   .t..~..v.......F
001240  0A 98 3B C6 75 0A C6 06-04 00 01 1F 5E 5F C9 CB   ..;.u.......^_..
001250  C6 06 04 00 00 1F 5E 5F-C9 CB 1E B8 00 00 8E D8   ......^_........
001260  C6 06 04 00 01 1F CB 90-1F 9C 28 00 C4 9A 9D C2   ..........(.....
001270  8E 9D C4 84 9D C4 7A 9D-CC 6C 56 0C C4 4E 56 0D   ......z..lV..EV.
001280  CC 3D 56 37 CC 23 56 59-CC 14 56 3B CC 0F 56 37   .=V7.#VY..V;..V7
001290  C8 08 9D 14 A0 06 00 03-00 00 00 00 57 9C 05 00   ............W...
0012A0  C8 00 56 23 1E A0 D8 00-01 9A 00 C8 00 00 00 1E   ..V#............
0012B0  B8 00 00 8E D8 A1 00 00-0B 06 02 00 75 27 80 3E   ............u'.>
0012C0  05 00 00 75 1A FE 06 05-00 1E 68 06 00 9A 00 00   ...u......h.....
0012D0  00 00 83 C4 04 9A 00 00-00 00 9A 00 00 00 00 2B   ...............+
0012E0  C0 1F C9 CB 90 8E 06 00-00 8B 46 06 26 A3 00 00   ..........F.&...
0012F0  8B 46 08 26 A3 02 00 8B-46 0A 8B 56 0C 26 A3 04   .F.&....F..V.&..
001300  00 26 89 16 06 00 8B 46-0E 8B 56 10 26 A3 08 00   .&.....F..V.&...
001310  26 89 16 0A 00 83 3E D4-00 00 7D 33 FF 36 02 00   &.....>...}3.6..
001320  FF 36 00 00 B8 00 00 BA-00 00 52 50 9A 00 00 00   .6........RP....
001330  00 83 C4 08 0B C0 75 0F-1E 68 4C 00 9A 00 00 00   ......u..hL.....
001340  00 83 C4 04 EB 99 90 C7-06 D4 00 01 00 EB 2A FF   ..............*.
001350  36 D4 00 FF 06 D4 00 FF-36 02 00 FF 36 00 00 B8   6.......6...6...
001360  00 00 BA 00 00 52 50 9A-00 00 00 00 83 C4 0A 0B   .....RP.........
001370  C0 75 06 1E 68 90 00 EB-C3 B8 01 00 1F C9 CB 81   .u..h...........
001380  9C 74 00 C4 CA 9D CC BD-56 57 C8 B8 56 23 C4 B5   .t......VW..V#..
001390  56 23 C4 B2 9D C4 AE 9D-C4 AA 9D C4 A6 9D C4 9E   V#..............
0013A0  9D CC 92 56 1C C4 8F 9D-CC 82 56 4D C8 7D 56 23   ...V......VM.}V#
0013B0  C4 7A 56 23 C4 77 9D C4-73 9D C4 6C 9D C4 68 56   .zV#.w..s..l..hV
0013C0  23 C4 63 56 23 C4 59 56-23 C4 54 56 23 C4 4A 56   #.cV#.YV#.TV#.JV
0013D0  23 C4 43 56 23 C4 3C 9C-CC 30 56 0C CC 2B 56 37   #.CV#.<..0V..+V7
0013E0  CC 23 56 59 C4 20 9D C4-1C 9D C4 15 9D C4 0F 9D   .#VY. ..........
0013F0  C4 0B 9D C8 06 9D 88 A0-30 00 03 02 00 00 00 40   ........0......@
001400  40 00 00 00 00 00 00 00-00 00 00 00 00 00 E0 6F   @..............o
001410  40 00 00 00 00 00 00 00-40 00 00 00 00 00 00 F0   @.......@.......
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001420  3F 00 00 00 00 00 00 E0-3F 8E A0 B7 03 01 6E 01   ?.......?.....n.
001430  C8 8C 0D 00 57 56 1E B8-00 00 8E D8 C7 86 BA F6   ....WV..........
001440  00 00 C7 86 4C F7 00 00-C7 86 EA F6 80 00 C7 86   ....L...........
001450  DC F6 78 00 C7 86 BC F6-02 00 C7 86 C0 F6 00 00   ..x.............
001460  C7 86 D6 F6 00 00 C7 46-A4 01 00 C7 86 C2 F6 00   .......F........
001470  00 C7 86 A0 F2 01 00 C7-86 EC F6 FF 00 C7 86 A2   ................
001480  F2 00 00 C7 86 E0 F6 7E-00 C7 86 D8 F6 76 00 C7   .......~.....v..
001490  86 DA F6 80 00 C7 86 CC-F6 78 00 C7 86 54 F7 0A   .........x...T..
0014A0  00 C7 46 C2 00 00 C7 86-EE F6 00 00 C7 46 AC 14   ..F..........F..
0014B0  00 68 00 03 68 00 D0 9A-00 00 00 00 83 C4 04 6A   .h..h..........j
0014C0  00 6A 02 9A 00 00 00 00-83 C4 04 6A 01 6A 01 6A   .j.........j.j.j
0014D0  00 9A 00 00 00 00 83 C4-06 6A 01 6A 01 9A 00 00   .........j.j....
0014E0  00 00 83 C4 04 6A 00 6A-01 9A 00 00 00 00 83 C4   .....j.j........
0014F0  04 C7 06 D4 00 FF FF 0E-E8 00 00 C7 86 C4 F6 00   ................
001500  00 C7 86 C6 F6 01 01 C7-86 C8 F6 00 00 C7 86 CA   ................
001510  F6 01 01 C7 86 B0 F6 F1-00 C7 86 B2 F6 F1 00 C7   ................
001520  86 B4 F6 00 00 C7 86 B6-F6 00 00 C7 46 BA 00 00   .............F..
001530  C7 46 BC 01 00 C7 46 BE-02 00 C7 46 C0 03 00 1E   .F...F...F......
001540  68 D6 00 9A 00 00 00 00-83 C4 04 6A 00 0E E8 00   h..........j....
001550  00 83 C4 02 9A 00 00 00-00 0B D2 7F 1B 7C 05 3D   ............!.=
001560  00 04 73 14 1E 68 0F 01-9A 00 00 00 00 83 C4 04   ..s..h..........
001570  2B C0 1F 5E 5F C9 CB 90-9A 00 00 00 00 9A 00 00   +..^_...........
001580  00 00 0B D2 7F 0E 7C 05-3D 22 01 73 07 1E 68 36   ......!.=".s..h6
001590  01 EB D5 90 FF B6 54 F7-FF B6 C2 F6 FF 76 A4 0E   .......T......v..
0015A0  E8 00 00 83 C4 06 1E 68-61 01 6A 00 9A 00 00 00   ........ha.j.....
0015B0  00 83 C4 06 C7 86 A6 F4-01 00 8B 8E A6 F4 8B F1   ................
0015C0  8B C1 88 82 A7 F4 C6 82-A8 F4 FF 88 82 A3 F2 C6   ................
0015D0  82 A4 F2 00 83 C1 02 81-F9 FF 00 7E E1 89 8E A6   ...........~....
0015E0  F4 6A 00 9A 00 00 00 00-83 C4 02 8D 86 A4 F2 16   .j..............
0015F0  50 8D 86 A4 F2 16 50 8D-86 A8 F4 16 50 68 00 01   P.....P.....Ph..
001600  6A 00 6A 00 6A 01 9A 00-00 00 00 83 C4 14 6A 00   j.j.j..........j.
001610  6A 02 9A 00 00 00 00 83-C4 04 6A 00 9A 00 00 00   j.........j.....
001620  00 83 C4 02 FF B6 EC F6-9A 00 00 00 00 83 C4 02   ................
001630  6A 01 68 FE 00 6A 06 FF-76 BC FF 76 BC 9A 00 00   j.h..j..v..v....
001640  00 00 83 C4 0A 6A 01 68-FE 00 6A 06 FF 76 BE FF   .....j.h..j..v..
001650  76 BE 9A 00 00 00 00 83-C4 0A 6A 01 68 FE 00 6A   v.........j.h..j
001660  06 FF 76 C0 FF 76 C0 9A-00 00 00 00 83 C4 0A 6A   ..v..v.........j
001670  00 FF 76 BA 9A 00 00 00-00 83 C4 04 9A 00 00 00   ..v.............
001680  00 A3 00 00 89 16 02 00-0B D2 7F 0E 7C 04 0B C0   ............!...
001690  75 08 2B C0 A3 02 00 A3-00 00 FF 36 02 00 FF 36   u.+.......6...6
0016A0  00 00 9A 00 00 00 00 83-C4 04 A3 00 00 89 16 02   ................
0016B0  00 1E 68 0E 00 1E 68 0E-00 1E 68 0E 00 1E 68 0E   ..h...h...h...h.
0016C0  00 1E 68 0E 00 1E 68 0E-00 1E 68 0C 00 1E 68 0A   ..h...h...h...h.
0016D0  00 1E 68 08 00 1E 68 06-00 9A 00 00 00 00 83 C4   ..h...h.........
0016E0  28 0B C0 75 24 1E 68 7F-01 9A 00 00 00 00 83 C4   (..u$.h.........
0016F0  04 C7 06 06 00 00 00 C7-06 08 00 00 00 C7 06 0A   ................
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001700  00 2B 00 C7 06 0C 00 3C-00 83 3E 06 00 00 75 3B   .+.....<..>...u;
001710  83 3E 08 00 00 75 34 83-3E 0A 00 00 75 2D 83 3E   .>...u4.>...u-.>
001720  0C 00 00 75 26 1E 68 A6-01 6A 00 9A 00 00 00 00   ...u&.h..j......
001730  83 C4 06 C7 06 06 00 00-00 C7 06 08 00 00 00 C7   ................
001740  06 0A 00 2B 00 C7 06 0C-00 3C 00 8D 86 F0 F6 16   ...+.....<......
001750  50 8D 86 56 F7 16 50 9A-00 00 00 00 83 C4 08 0B   P..V..P.........
001760  D0 75 14 9B D9 EE 9B D9-9E 56 F7 9B D9 06 02 00   .u........V.....
001770  9B D9 9E F0 F6 90 9B 8D-46 B2 16 50 8D 46 C4 16   .........F..P.F..
001780  50 9A 00 00 00 00 83 C4-08 9B D9 86 F0 F6 9B DC   P...............
001790  16 06 00 9B DD D8 9B DF-E0 9E 75 0A 9B D9 06 02   ...........u.....
0017A0  00 9B D9 9E F0 F6 9B D9-86 F0 F6 9B DC 16 06 00   ................
0017B0  9B DD D8 9B DF E0 9E 72-13 9B D9 86 F0 F6 9B D8   ........r.......
0017C0  96 56 F7 9B DD D8 9B DF-E0 9E 73 0A 9B D9 06 02   .V........=.....
0017D0  00 9B D9 9E F0 F6 9B D9-46 C4 9B D8 4E B2 9B D9   .........F...N...
0017E0  95 A8 F6 10 9C 5A 01 C7-AE 56 05 C7 AA 56 05 C7   .....Z...V...V..
0017F0  A6 56 05 C7 A1 56 05 C7-9F 9C C7 9C 56 05 C7 96   .V...V.......V...
001800  56 05 C7 93 56 05 C7 8E-56 05 C7 89 56 05 C7 83   V...V...V...V...
001810  56 05 C7 80 56 05 C7 7E-9C C7 7B 56 05 C7 76 56   V...V..~..{V..vV
001820  05 C7 71 56 05 C7 6F 9C-C7 6C 56 05 C7 66 56 05   ..qV..o..lV..fV.
001830  C7 63 56 05 C7 61 9C C7-5E 56 05 C7 59 56 05 CF   .cV..a..^V..YV..
001840  52 56 0B C7 45 56 06 C7-40 56 05 C7 3E 9C C7 3B   RV..EV..@V..>..;
001850  56 05 C7 36 56 05 C7 33-56 05 CF 28 56 2A C7 17   V..6V..3V..(V*..
001860  9F C7 11 9F C7 0B 9F C7-05 9F CE FC 56 25 C6 F7   ............V%..
001870  9D C6 F0 9F C6 E9 9F C6-E2 9F C6 DB 9F C6 D5 9F   ................
001880  C6 CF 9F C6 C9 9F C6 C3-9F CE BA 56 1C C6 B7 9D   ...........V....
001890  CE AA 56 4C C6 A7 9F C6-A3 9F C6 9F 9F C6 9B 9F   ..VL............
0018A0  C6 97 9F C6 93 9F C6 8F-9F C6 8B 9F C6 87 9F C6   ................
0018B0  83 9F C6 7F 9D C6 7B 9D-CE 73 56 1B C6 70 9F C6   ......{..sV..p..
0018C0  6C 9F C6 68 9F C6 65 9F-C6 56 9F C6 52 9F CE 4D   l..h..e..V..R..M
0018D0  56 08 CE 45 56 58 CE 38-56 56 CE 23 56 56 CE 0E   V..EVX.8VV.#VV..
0018E0  56 56 CD F9 56 55 CD ED-56 53 CD E3 56 3E CD D7   VV..VU..VS..V>..
0018F0  56 52 CD B4 56 50 CD 7D-56 25 C5 78 9D 85 71 56   VR..VP.}V%..x..qV
001900  4A C5 5F 9D CD 4E 56 3D-CD 49 56 47 CD 39 56 1C   J._..NV=.IVG.9V.
001910  C5 36 9D CD 25 56 39 85-1F 56 45 CD 14 56 28 C5   .6..%V9..VE..V(.
001920  11 9D 84 C9 56 12 C4 C3-9D CC BA 56 43 CC AE 56   ....V......VC..V
001930  41 CC A2 56 40 CC 94 56-3E CC 88 56 3C C8 08 9D   A..V@..V>..V<...
001940  77 A0 B8 03 01 21 05 9B-D9 86 F0 F6 9B DC 36 0E   w....!.........6.
001950  00 9B D8 B6 A8 F6 9B D9-5E A8 90 9B C7 86 A6 F4   ........^.......
001960  00 00 2B C0 B9 00 01 8D-BE A4 F2 16 07 F2 AB 80   ..+.............
001970  86 A7 F4 02 BF EF 00 C7-86 98 F2 DE 01 FF 76 C0   ...............v.
001980  6A 00 9A 00 00 00 00 83-C4 04 8D 86 A8 F4 16 50   j..............P
001990  68 00 02 FF B6 98 F2 6A-00 9A 00 00 00 00 83 C4   h......j........
0019A0  0A C7 46 EE 00 00 8D 86-A8 F4 89 86 9A F2 8C 96   ..F.............
0019B0  9C F2 2B C9 8C 9E 9E F2-C5 B6 9A F2 8B D9 03 DD   ..+.............
0019C0  8A 04 36 88 87 A4 F2 83-C6 02 41 81 F9 FE 00 7E   ..6........A....~
0019D0  EB 8E 9E 9E F2 89 4E EE-FF 76 BA 6A 00 9A 00 00   ......N..v.j....
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0019E0   00 00 83 C4 04 8D 86 A4-F2 16 50 68 00 02 0D 85   ..........Ph....
0019F0   F0 00 50 6A 00 9A 00 00-00 00 83 C4 0A 83 AE 98   ..Pj............
001A00   F2 02 4F 83 FF 01 7C 03-E9 72 FF 89 BE A6 F4 1E   ..O...|..r......
001A10   68 C8 01 9A 00 00 00 00-83 C4 04 FF 76 BC 6A 00   h...........v.j.
001A20   9A 00 00 00 00 83 C4 04-1E 68 D5 01 9A 00 00 00   .........h......
001A30   00 83 C4 04 A1 06 00 99-2B C2 D1 F8 89 86 B8 F6   ........+.......
001A40   A1 08 00 99 2B C2 D1 F8-05 F1 00 89 86 AC F6 A1   ....+...........
001A50   0A 00 99 B9 04 00 F7 F9-03 86 B8 F6 89 46 D0 6A   .............F.j
001A60   00 6A 01 9A 00 00 00 00-83 C4 04 6A 00 9A 00 00   .j..........j...
001A70   00 00 83 C4 02 6A 00 6A-00 9A 00 00 00 00 83 C4   .....j.j........
001A80   04 FF B6 A0 F2 9A 00 00-00 00 83 C4 02 2B F6 A1   .............+..
001A90   0A 00 99 2B C2 D1 F8 F7-EE 03 46 D0 89 46 A0 56   ...+......F..F.V
001AA0   0E E8 00 00 83 C4 02 8B-D8 8E C2 57 8B FB B9 FF   ...........W....
001AB0   FF 33 C0 F2 AE F7 D1 49-5F 8B F9 56 0E E8 00 00   .3.....I_..V....
001AC0   83 C4 02 52 50 57 57 6A-01 68 FA 00 FF 76 A0 6A   ...RPWWj.h...v.j
001AD0   01 6A 00 9A 00 00 00 00-83 C4 12 46 83 FE 0B 7E   .j.........F...~
001AE0   AE 89 BE 5A F7 89 B6 A6-F4 A1 0C 00 99 B9 04 00   ...Z............
001AF0   F7 F9 8B C8 A1 08 00 99-2B C2 D1 F8 03 C1 05 F7   ........+.......
001B00   00 89 46 C8 2B F6 A1 0C-00 99 2B C2 D1 F8 F7 EE   ..F.+.....+.....
001B10   03 46 C8 89 86 5C F7 56-0E E8 00 00 83 C4 02 8B   .F...\.V........
001B20   D8 8E C2 57 8B FB B9 FF-FF 33 C0 F2 AE F7 D1 49   ...W.....3.....I
001B30   5F 8B F9 56 0E E8 00 00-83 C4 02 52 50 57 57 6A   _..V.......RPWWj
001B40   02 FF B6 5C F7 6A 08 6A-01 6A 00 9A 00 00 00 00   ...\.j.j.j......
001B50   83 C4 12 46 83 FE 07 7E-AD 89 BE 5A F7 89 B6 A6   ...F...~...Z....
001B60   F4 6A 00 6A 02 9A 00 00-00 00 83 C4 04 6A 00 FF   .j.j.........j..
001B70   76 BA 6A FF FF 76 BA 9A-00 00 00 00 83 C4 08 6A   v.j..v.........j
001B80   00 6A 02 9A 00 00 00 00-83 C4 04 8B 86 EA F6 05   .j..............
001B90   FE 00 89 86 DE F6 8B 86-DC F6 05 EE 00 89 86 D2   ................
001BA0   F6 8B 86 EA F6 99 2B C2-D1 F8 40 89 86 D4 F6 8B   ......+...@.....
001BB0   86 DC F6 99 2B C2 D1 F8-05 F1 00 89 86 BE F6 FF   ....+...........
001BC0   B6 A0 F2 9A 00 00 00 00-83 C4 02 8B B6 D4 F6 03   ................
001BD0   B6 E0 F6 8B BE BE F6 03-BE D8 F6 57 56 FF B6 BE   ...........WV...
001BE0   F6 FF B6 D4 F6 FF 76 BA-6A 00 9A 00 00 00 00 83   ......v.j.......
001BF0   C4 0C 9B DF 06 0A 00 9B-D9 C0 9B DB BE 8E F2 90   ................
001C00   9B 8B 86 D4 F6 2B 86 B8-F6 89 86 98 F2 9B DF 86   .....+..........
001C10   98 F2 9B DC 0E 16 00 9B-D8 F1 9B D9 9E 4E F7 90   .............N..
001C20   9B 8B C6 2B 86 B8 F6 89-86 98 F2 9B DF 86 98 F2   ...+............
001C30   9B DC 0E 16 00 9B D8 F1-9B D9 9E F4 F6 9B DF 06   ................
001C40   0C 00 9B D9 C0 9B DB BE-84 F2 90 9B 8B 86 BE F6   ................
001C50   2B 86 AC F6 89 86 98 F2-9B DF 86 98 F2 9B DC 0E   +...............
001C60   16 00 9B D8 F1 9B D9 9E-F8 F6 90 9B 8B C7 2B 86   ..............+.
001C70   AC F6 89 86 98 F2 9B DF-86 98 F2 9B DC 0E 16 00   ................
001C80   9B D8 F1 9B D9 9E E2 F6-9B D9 86 4E F7 9A 00 00   ...........N....
001C90   00 00 89 46 D2 9B D9 86-F4 F6 9A 00 00 00 00 89   ...F............
001CA0   46 CA 9B D9 86 F8 F6 9A-00 00 00 00 89 46 CC 9B   F............F..
001CB0   D9 86 E2 F6 9A 00 00 00-00 89 46 B6 9B DF 46 D2   ..........F...F.
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001CC0   9B D8 A6 4E F7 9B DC 06-1E 00 9B D9 96 E6 F6 9B   ...N............
001CD0   DC 16 06 00 9B DD D8 9B-DF E0 9E 9B DD C1 9B DD   ................
001CE0   C0 74 13 9B D9 86 E6 F6-9B DC 16 1E 00 9B DD D8   .t..............
001CF0   9B DF E0 9E 75 14 9B DF-06 0A 00 C5 9C 69 01 C7   ....u........i..
001D00   B2 9F C7 AF 56 05 C7 A9-56 05 C7 A6 56 05 C7 A4   ....V...V...V...
001D10   9C C7 A1 56 05 C7 9C 56-05 C7 97 56 05 C7 94 56   ...V...V...V...V
001D20   05 C7 90 56 05 C7 8D 56-05 C7 8B 9C C7 88 56 05   ...V...V......V.
001D30   C7 83 56 05 C7 81 9C C7-7E 56 05 C7 79 56 05 C7   ..V.....~V..yV..
001D40   75 56 05 CF 6E 56 51 C7-68 56 05 CF 61 56 51 C7   uV..nVQ.nV..aVQ.
001D50   5B 56 05 CF 54 56 51 C7-4E 56 05 CF 47 56 51 C7   [V..TVQ.NV..GVQ.
001D60   41 56 05 C7 3C 56 05 C7-39 56 05 C7 37 9C C7 34   AV..<V..9V..7..4
001D70   56 05 C7 2F 56 05 C7 23-56 06 C7 1E 56 05 C7 1B   V../V..#V...V...
001D80   56 05 C7 19 9C C7 16 56-05 C7 11 56 05 C7 03 56   V......V...V...V
001D90   06 C6 FE 56 05 C6 FB 56-05 C6 F9 9F C6 F6 56 05   ...V...V......V.
001DA0   C6 F1 56 05 C6 EE 56 05-C6 EC 9C C6 E9 56 05 C6   ..V...V......V..
001DB0   E4 56 05 C6 D8 56 06 C6-D3 56 05 C6 D0 56 05 C6   .V...V...V...V..
001DC0   CE 9C C6 CB 56 05 C6 C6-56 05 C6 B8 56 06 C6 B3   ....V...V...V...
001DD0   56 05 C6 B0 56 05 C6 AE-9F C6 AB 56 05 CE A4 56   V...V......V...V
001DE0   26 CE 7D 56 55 CE 3D 56-3E CE 31 56 24 CE 1F 56   &.}VU.=V>.1V$..V
001DF0   3E CE 05 56 21 85 EF 56-2F 85 D3 56 2F C5 C0 9F   >..V!..V/..V/...
001E00   C5 AE 9F C5 A3 9F CD 9D-56 21 85 77 56 2D 85 5B   ........V!.wV-.[
001E10   56 2D C5 49 9F CD 3F 56-55 CD 33 56 3E CD 27 56   V-.I..?VU.3V>.'V
001E20   1D CD 1D 56 3E C5 09 9F-C4 FA 9F C4 EE 9F CC E6   ...V>...........
001E30   56 1A C4 E3 9D CC DA 56-3E CC CD 56 1A C4 CA 9D   V......V>..V....
001E40   CC AF 56 19 CC 97 56 3E-CC 53 56 16 CC 3C 56 3E   ..V...V>.SV..<V>
001E50   C4 13 56 06 C4 0F 56 05-C4 0A 56 05 C4 08 9C C4   ..V...V...V.....
001E60   05 56 05 C4 00 56 05 49-A0 17 03 01 D5 08 9B DC   .V...V.I........
001E70   36 16 00 9A 00 00 00 00-89 46 B8 EB 48 9B D9 86   6........F..H...
001E80   E6 F6 9B DC 16 26 00 9B-DD D8 9B DF E0 9E 76 13   ......&.......v.
001E90   9B D9 86 E6 F6 9B DC 16-26 00 9B DD D8 9B DF E0   ........&.......
001EA0   9E 76 22 9B D9 86 E6 F6-9B DE 0E 0A 00 9B DF 06   .v".............
001EB0   0A 00 9B DC 36 16 00 9B-DE C1 9A 00 00 00 00 89   ....6...........
001EC0   46 B8 FF 46 D2 9B DF 46-CA 9B D8 A6 F4 F6 9B DC   F..F...F........
001ED0   06 1E 00 9B D9 96 E6 F6-9B DC 16 06 00 9B DD D8   ................
001EE0   9B DF E0 9E 74 16 9B D9-86 E6 F6 9B DC 16 1E 00   ....t...........
001EF0   9B DD D8 9B DF E0 9E 74-03 FF 4E CA 9B DF 46 CC   .......t..N...F.
001F00   9B D8 A6 F8 F6 9B DC 06-1E 00 9B D9 96 CE F6 9B   ................
001F10   DC 16 06 00 9B DD D8 9B-DF E0 9E 74 13 9B D9 86   ...........t....
001F20   CE F6 9B DC 16 1E 00 9B-DD D8 9B DF E0 9E 75 15   ..............u.
001F30   9B DF 06 0C 00 9B DC 36-16 00 9A 00 00 00 00 89   .......6........
001F40   86 A4 F4 EB 49 9B D9 86-CE F6 9B DC 16 26 00 9B   ....I........&..
001F50   DD D8 9B DF E0 9E 76 13-9B D9 86 CE F6 9B DC 16   ......v.........
001F60   26 00 9B DD D8 9B DF E0-9E 76 23 9B D9 86 CE F6   &.........v#....
001F70   9B DE 0E 0C 00 9B DF 06-0C 00 9B DC 36 16 00 9B   ..............6..
001F80   DE C1 9A 00 00 00 00 89-86 A4 F4 FF 46 CC 9B DF   .............F..
001F90   46 B6 9B D8 A6 E2 F6 9B-DC 06 1E 00 9B D9 96 CE   F...............
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001FA0  F6 9B DC 16 06 00 9B DD-D8 9B DF E0 9E 74 16 9B   .............t..
001FB0  D9 B6 CE F6 9B DC 16 1E-00 9B DD D8 9B DF E0 9E   ................
001FC0  74 03 FF 4E B6 FF B6 D2-F6 FF B6 DE F6 FF B6 DC   t..N............
001FD0  F6 FF B6 EA F6 0E E8 00-00 83 C4 08 FF B6 54 F7   ..............T.
001FE0  FF B6 C2 F6 FF 76 A4 0E-E8 00 00 83 C4 06 E9 68   .....v.........h
001FF0  0D 8D 86 C0 F6 16 50 8D-46 CE 16 50 8D 46 F2 16   ......P.F..P.F..
002000  50 9A 00 00 00 00 83 C4-0C 89 46 F0 FF B6 C0 F6   P.........F.....
002010  9A 00 00 00 00 83 C4 02-83 7E A4 00 74 23 83 7E   .........~..t#.~
002020  F0 00 7E 1D 83 7E C2 01-75 17 FF B6 D2 F6 FF B6   ..~..~..u.......
002030  DE F6 FF B6 DC F6 FF B6-EA F6 0E E8 00 00 83 C4   ................
002040  08 83 7E F0 00 7F 03 E9-0F 0D 83 7E F0 01 74 03   ..~........~..t.
002050  E9 91 03 83 7E A4 00 75-62 C7 86 C2 F6 00 00 8B   ....~..ub.......
002060  46 F2 01 86 DA F6 8B 46-CE 01 86 CC F6 83 BE DA   F......F........
002070  F6 00 7D 06 C7 86 DA F6-00 00 81 BE DA F6 FE 00   ..}.............
002080  7E 06 C7 86 DA F6 FE 00-83 BE CC F6 00 7D 06 C7   ~............}..
002090  86 CC F6 00 00 81 BE CC-F6 EE 00 7E 06 C7 86 CC   ...........~....
0020A0  F6 EE 00 FF B6 CC F6 FF-B6 DA F6 FF B6 54 F7 FF   .............T..
0020B0  76 BA 6A 01 0E E8 00 00-83 C4 0A 83 7E A4 01 74   v.j.........~..t
0020C0  03 E9 20 03 8B 46 F2 F7-AE BC F6 01 86 EA F6 8B   .. ..F..........
0020D0  46 CC F7 AE BC F6 01 86-DC F6 83 BE EA F6 01 7D   F..............}
0020E0  0A C7 86 EA F6 01 00 FF-86 A2 F2 81 BE EA F6 FE   ................
0020F0  00 7E 0A C7 86 EA F6 FE-00 FF 86 A2 F2 83 BE DC   .~..............
002100  F6 00 7D 06 C7 86 DC F6-00 00 81 BE DC F6 EE 00   ..}.............
002110  7E 06 C7 86 DC F6 EE 00-8B 86 EA F6 05 FE 00 89   ~...............
002120  86 DE F6 8B 86 DC F6 05-EE 00 89 86 D2 F6 8B 86   ................
002130  EA F6 D1 F8 40 89 86 D4-F6 8B 86 DC F6 D1 F8 05   ....@...........
002140  F1 00 89 86 BE F6 FF B6-A0 F2 9A 00 00 00 00 83   ................
002150  C4 02 8B B6 D4 F6 03 B6-E0 F6 8B BE BE F6 03 BE   ................
002160  D8 F6 57 56 FF B6 BE F6-FF B6 D4 F6 FF 76 BA 6A   ..WV.........v.j
002170  01 9A 00 00 00 00 83 C4-0C 9B DF 06 0A 00 9B D9   ................
002180  C0 9C 9C 76 01 C7 10 56-05 C7 0E 9F C7 0B 56 05   ...v...V......V.
002190  CF 04 56 26 CE DD 56 55-86 48 56 54 85 CE 56 44   ..V&..VU.HVT..VD
0021A0  CD A3 56 31 CD 94 56 46-85 7B 56 4A 85 69 56 44   ..V1..VF.{VJ.iVD
0021B0  C5 4E 56 05 C5 4B 56 05-C5 49 9C C5 46 56 05 C5   .NV..KV..I..FV..
0021C0  41 56 05 C5 3B 56 05 C5-38 56 05 C5 36 9C C5 33   AV..;V..8V..6..3
0021D0  56 05 C5 2E 56 05 C5 2C-9C C5 29 56 05 C5 24 56   V...V..,..)V..$V
0021E0  05 C5 20 56 05 CD 15 56-51 C5 11 56 05 C5 0F 9C   .. V...VQ..V....
0021F0  C5 0C 56 05 C5 0A 9F C5-07 56 05 C5 05 9F C5 02   ..V......V......
002200  56 05 C4 FD 56 05 C4 F7-56 05 C4 F4 56 05 C4 F2   V...V...V...V...
002210  9C C4 EF 56 05 C4 EA 56-05 C4 E4 56 05 C4 E1 56   ...V...V...V...V
002220  05 C4 DF 9C C4 DC 56 05-C4 D7 56 05 CC CD 56 51   ......V...V...VQ
002230  C4 CA 9C C4 C7 56 05 C4-C5 9F C4 C2 56 05 C4 BC   .....V......V...
002240  56 05 C4 B9 56 05 C4 B7-9C C4 B4 56 05 C4 AF 56   V...V.......V...V
002250  05 C4 A9 56 05 C4 A6 56-05 C4 A4 9C C4 A1 56 05   ...V...V......V.
002260  C4 9C 56 05 C4 9A 9C C4-97 56 05 C4 92 56 05 C4   ..V......V...V..
002270  8E 56 05 C4 85 56 05 C4-82 56 05 C4 80 9C C4 7D   .V...V...V.....}
```

```
002280   56 05 C4 78 56 05 C4 72-56 05 C4 6F 56 05 C4 6D   V..xV..rV..oV..m
002290   9C C4 6A 56 05 C4 65 56-05 C4 63 9C C4 60 56 05   ..jV..eV..c..`V.
0022A0   C4 5B 56 05 C4 57 56 05-CC 4D 56 51 C4 49 56 05   .[V..WV..MVQ.IV.
0022B0   C4 47 9C C4 44 56 05 C4-42 9F C4 3F 56 05 C4 3D   .G..DV..B..?V..=
0022C0   9F C4 3A 56 05 C4 35 56-05 C4 2F 56 05 C4 2C 56   ..:V..5V../V..,V
0022D0   05 C4 2A 9C C4 27 56 05-C4 22 56 05 C4 1C 56 05   ..*..'V.."V...V.
0022E0   C4 19 56 05 C4 17 9C C4-14 56 05 C4 0F 56 05 CC   ..V......V...V..
0022F0   06 56 51 C4 03 9C C4 00-56 05 3B A0 AE 01 01 E8   .VQ......V.;......
002300   0B 9B DB BE 84 F2 90 9B-8B 86 D4 F6 2B 8C B8 F6   .............+...
002310   89 86 98 F2 9B DF 86 98-F2 9B DC 0E 16 00 9B D8   ................
002320   F1 9B D9 9E 4E F7 90 9B-8B C6 2B 86 B8 F6 89 86   ....N.....+......
002330   98 F2 9B DF 86 98 F2 9B-DC 0E 16 00 9B D8 F1 9B   ................
002340   D9 9E F4 F6 9B DF 06 0C-00 9B D9 C0 9B DB BE 8E   ................
002350   F2 90 9B 8B 86 BE F6 2B-86 AC F6 89 86 98 F2 9B   ........+.......
002360   DF 86 98 F2 9B DC 0E 16-00 9B D8 F1 9B D9 9E F8   ................
002370   F6 90 9B 8B C7 2B 86 AC-F6 89 86 98 F2 9B DF 86   ......+.........
002380   98 F2 9B DC 0E 16 00 9B-D8 F1 9B D9 9E E2 F6 9B   ................
002390   D9 86 4E F7 9A 00 00 00-00 89 46 D2 9B D9 86 F4   ..N.......F.....
0023A0   F6 9A 00 C0 00 00 89 46-CA 9B D9 8C F8 F6 9A 00   .......F........
0023B0   00 00 00 89 46 CC 9B D9-86 E2 F6 9A 00 00 00 00,  ....F...........
0023C0   89 46 B6 9B DF 46 D2 9B-D8 A6 4E F7 9B DC 06 1E   .F...F....N.....
0023D0   00 9B D9 96 E6 F6 9B DC-16 06 00 9B DD D8 9B DF   ................
0023E0   E0 9E 9B DD C1 9B DD C0-74 13 9B D9 86 E6 F6 9B   .........t.......
0023F0   DC 16 1E 00 9B DD D8 9B-DF E0 9E 75 14 9B DF 06   ..............u....
002400   0A 00 9B DC 36 16 00 9A-00 00 00 00 89 46 B8 EB   ....6.........F..
002410   48 9B D9 86 E6 F6 9B DC-16 26 00 9B DD D8 9B DF   H.........&......
002420   E0 9E 76 13 9B D9 96 E6-F6 9B DC 16 26 00 9B DD   ..v..........&...
002430   D8 9B DF E0 9E 76 22 9B-D9 86 E6 F6 9B DE 0E 0A   .....v".........
002440   00 9B DF 06 0A 00 9B DC-36 16 00 9B DE C1 9A 00   .........6.......
002450   00 00 00 89 46 B8 FF 46-D2 9B DF 46 CA 9B D8 A6   ....F..F...F....
002460   F4 F6 9B DC 06 1E 00 9B-D9 96 E6 F6 9B DC 16 06   ................
002470   00 9B DD D8 9B DF E0 9E-74 16 9B D9 86 E6 F6 9B   .........t.......
002480   DC 16 1E 00 9B DD D8 9B-DF E0 9E 74 03 FF 4E CA   ............t..N.
002490   9B DF 46 CC 9B D8 A6 F8-F6 9B DC 06 1E 00 9B D9   ..F.............
0024A0   96 CE F6 9B DC 16 06 00-9B DD D8 1F 9C 79 01 C5   ..............y..
0024B0   A7 56 05 C5 A5 9C C5 A2-56 05 C5 9D 56 05 C5 9B   .V.......V...V...
0024C0   9C C5 98 56 05 C5 93 56-05 C5 8F 56 05 C5 86 56   ...V...V...V...V
0024D0   05 C5 83 56 05 C5 81 9C-C5 7E 56 05 C5 79 56 05   ...V.....~V..yV.
0024E0   C5 73 56 05 C5 70 56 05-C5 6E 9C C5 6B 56 05 C5   .sV..pV..n..kV..
0024F0   66 56 05 C5 64 9C C5 61-56 05 C5 5C 56 05 C5 58   fV..d..aV..\V..X
002500   56 05 CD 4E 56 51 C5 4A-56 05 C5 48 9C C5 45 56   V..NVQ.JV..H..EV
002510   05 C5 43 9F C5 40 56 05-C5 3E 9F C5 3B 56 05 C5   ..C..@V..>..;V..
002520   36 56 05 C5 30 56 05 C5-2D 56 05 C5 2B 9C C5 28   6V..0V..-V..+..(
002530   56 05 C5 23 56 05 C5 1D-56 05 C5 1A 56 05 C5 18   V..#V...V...V...
002540   9C C5 15 56 05 C5 10 56-05 CD 07 56 51 C5 04 9C   ...V...V...VQ...
002550   C5 01 56 05 C4 FF 9F C4-FC 56 05 C4 F6 56 05 C4   ..V......V...V..
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002560  F3 56 05 C4 F1 9C C4 EE-56 05 C4 E9 56 05 C4 E4   .V......V...V...
002570  56 05 C4 E1 56 05 C4 DD-56 05 C4 DA 56 05 C4 D8   V...V...V...V...
002580  9C C4 D5 56 05 C4 D0 56-05 C4 CE 9C C4 CB 56 05   ...V...V......V.
002590  C4 C6 56 05 C4 C2 56 05-CC BB 56 51 C4 B5 56 05   ..V...V...VQ..V.
0025A0  CC AE 56 51 C4 A8 56 05-CC A1 56 51 C4 9B 56 05   ..VQ..V...VQ..V.
0025B0  CC 94 56 51 C4 8E 56 05-C4 89 56 05 C4 86 56 05   ..VQ..V...V...V.
0025C0  C4 84 9C C4 81 56 05 C4-7C 56 05 C4 70 56 06 C4   ......V..|V..pV..
0025D0  6B 56 05 C4 68 56 05 C4-66 9C C4 63 56 05 C4 5E   kV..hV..f..cV..^
0025E0  56 05 C4 50 56 06 C4 4B-56 05 C4 48 56 05 C4 46   V..PV..KV..HV..F
0025F0  9F C4 43 56 05 C4 3E 56-05 C4 3B 56 05 C4 39 9C   ..CV..>V..;V..9.
002600  C4 36 56 05 C4 31 56 05-C4 25 56 06 C4 20 56 05   .6V..1V..%V.. V.
002610  C4 1D 56 05 C4 1B 9C C4-18 56 05 C4 13 56 05 C4   ..V.......V...V..
002620  05 56 06 C4 00 56 05 E9-A0 B4 03 01 92 0D 9B DF   .V...V..........
002630  E0 9E 74 13 9B D9 86 CE-F6 9B DC 16 1E 00 9B DD   ..t.............
002640  D8 9B DF E0 9E 75 15 9B-DF 06 0C 00 9B DC 36 16   .....u.........6.
002650  00 9A 00 00 00 00 89 86-A4 F4 EB 49 9B D9 86 CE   ............I....
002660  F6 9B DC 16 26 00 9B DD-D8 9B DF E0 9E 76 13 9B   ....&.........v..
002670  D9 86 CE F6 9B DC 16 26-00 9B DD D8 9B DF E0 9E   .......&........
002680  76 23 9B D9 86 CE F6 9B-DE 0E 0C 00 9B DF 06 0C   v#..............
002690  00 9B DC 36 16 00 9B DE-C1 9A 00 00 00 00 89 86   ...6............
0026A0  A4 F4 FF 46 CC 9B DF 46-B6 9B D8 A6 E2 F6 9B DC   ...F...F........
0026B0  06 1E 00 9B D9 96 CE F6-9B DC 16 06 00 9B DD D8   ................
0026C0  9B DF E0 9E 74 16 9B D9-86 CE F6 9B DC 16 1E 00   ....t...........
0026D0  9B DD D8 9B DF E0 9E 74-03 FF 4E B6 C7 46 C2 01   ........t..N..F..
0026E0  00 C7 86 EE F6 00 00 83-7E F0 03 75 6B 8B 86 C0   ........~..uk...
0026F0  F6 3D 04 00 75 62 83 7E-A4 00 75 51 C7 86 C2 F6   .=..ub.~..uQ....
002700  01 00 8B 46 CE 29 86 54-F7 83 BE 54 F7 02 7D 06   ...F.).T...T..}.
002710  C7 86 54 F7 02 00 83 BE-54 F7 1E 7E 06 C7 86 54   ..T.....T..~...T
002720  F7 1E 00 FF B6 CC F6 FF-B6 DA F6 FF B6 54 F7 FF   .............T..
002730  76 BA 6A 01 0E E8 00 00-83 C4 0A FF B6 54 F7 FF   v.j..........T..
002740  B6 C2 F6 FF 76 A4 0E E8-00 00 83 C4 06 83 7E A4   ....v.........~.
002750  01 75 05 C7 46 A4 01 00-83 7E F0 02 74 03 E9 FB   .u..F....~..t...
002760  08 8B 86 C0 F6 3D 01 00-74 1C 3D 02 00 75 03 E9   ......=..t.=..u..
002770  76 04 3D 05 00 75 03 E9-86 07 3D 07 00 75 03 E9   v.=..u....=..u..
002780  D4 08 E9 D7 08 90 FF 46-A4 83 7E A4 01 7F 03 E9   .......F..~....
002790  74 01 C7 46 A4 00 00 C7-86 C2 F6 00 00 FF B6 54   t..F...........T
0027A0  F7 6A 00 6A 00 0E E8 00-00 83 C4 06 1E 68 E3 01   .j.j.........h..
0027B0  6A 00 9A 00 00 00 00 83-C4 06 6A 01 0E E8 00 00   j.........j.....
0027C0  83 C4 02 6A 00 6A 02 9A-00 00 00 00 83 C4 04 6A   ...j.j.........j
0027D0  01 6A 00 9A 00 00 00 00-83 C4 04 6A 00 9A 00 00   .j.........j....
0027E0  00 00 83 C4 02 6A 00 FF-76 BA 9A 00 00 00 00 83   .....j..v.......
0027F0  C4 04 6A 08 68 80 00 6A-00 FF 76 BA FF 76 C0 9A   ..j.h..j..v..v..
002800  00 00 00 00 83 C4 0A 6A-01 FF 76 BA FF 76 BE FF   .......j..v..v..
002810  76 BA 9A 00 00 00 00 83-C4 08 6A 00 9A 00 00 00   v.........j.....
002820  00 83 C4 02 6A 05 6A 01-FF B6 B0 F6 FF B6 C4 F6   ....j.j.........
002830  FF 76 BA FF B6 D2 F6 FF-B6 DE F6 FF B6 DC F6 FF   .v..............
```
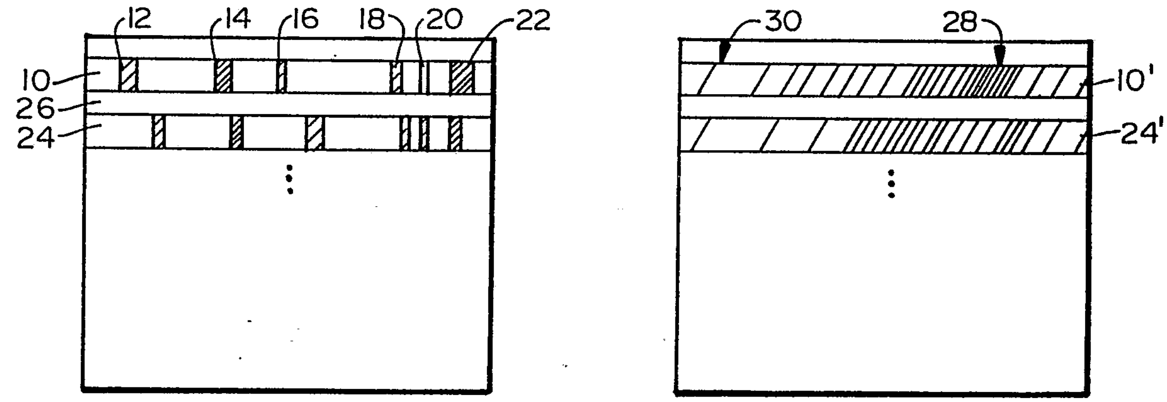

```
002840  B6 EA F6 FF 76 BA 9A 00-00 00 00 83 C4 14 6A 00  ....v.........j.
002850  6A 02 9A 00 00 00 00 83-C4 04 6A 01 6A 01 9A 00  j.........j.j...
002860  00 00 00 83 C4 04 FF B6-D2 F6 FF B6 DE F6 FF B6  ................
002870  DC F6 FF B6 EA F6 0E E8-00 00 83 C4 08 0E E8 00  ................
002880  00 FF 76 BA 6A 00 9A 00-00 00 00 83 C4 04 FF 76  ..v.j..........v
002890  BA 9A 00 00 00 00 83 C4-02 FF 76 BA 6A 01 9A 00  ..........v.j...
0028A0  00 00 00 83 C4 04 FF B6-A0 F2 9A 00 00 00 00 83  ................
0028B0  C4 02 6A 00 9A 00 00 00-00 83 C4 02 FF B6 A0 F2  ..j.............
0028C0  9A 00 00 00 00 83 C4 02-FF B6 CC F6 FF B6 DA F6  ................
0028D0  FF B6 54 F7 FF 76 BA 6A-00 0E E8 00 00 83 C4 0A  ..T..v.j........
0028E0  0E E8 00 00 FF 76 B6 FF-76 CC FF 76 CA FF 76 D2  .....v..v..v..v.
0028F0  FF B6 A4 F4 FF 76 B8 FF-36 0C 00 FF 36 0A 00 0E  .....v..6...6...
002900  E8 00 00 83 C4 10 83 7E-A4 01 74 03 E9 4D 07 6A  .......~..t..M.j
002910  00 6A 01 9A 00 00 00 00-83 C4 04 6A 00 9A 00 00  .j.........j....
002920  00 00 83 C4 02 FF B6 54-F7 FF B6 C2 F6 FF 76 A4  .......T......v.
002930  0E E8 00 00 83 C4 06 1E-68 0B 02 6A 00 9A 00 00  ........h..j....
002940  00 00 83 C4 06 6A 00 0E-E8 00 00 83 C4 02 83 BE  .....j..........
002950  BA F6 00 75 03 E9 D2 00-80 3E 04 00 00 74 18 9A  ...u.....>...t..
002960  00 00 00 00 0B C0 75 0F-6A 49 6A 43 1E 68 29 02  ......u.jIjC.h).
002970  0E E8 00 00 83 C4 08 80-3E 04 00 00 75 03 E9 9D  ........>...u...
002980  00 6A 01 1E 68 64 02 9A-00 00 00 00 83 C4 06 89  .j..hd..........
002990  46 A2 40 75 11 1E 68 68-02 6A 01 9A 00 00 00 00  F.@u..hh.j......
0029A0  83 C4 06 E9 6E 90 C7 86-A6 F4 00 00 B8 20 20 B9  ....n........  .
0029B0  01 00 8D BE FC F6 16 07-F2 AB AA 83 86 A6 F4 03  ................
0029C0  8D 86 FC F6 8B D8 8B FB-8C D0 B9 FF FF 33 C0 F2  .............3..
0029D0  AE F7 D1 49 51 8D 86 FC-F6 16 50 FF 76 A2 AB 9C  ...IQ.....P.v...
0029E0  4D 01 CF 6E 56 25 C7 69-9D CF 5A 56 30 C7 57 9D  M..nV%.i..ZV0.W.
0029F0  C7 4B 9D 87 44 56 4F C7-40 9D CF 32 56 42 C7 2C  .K..DVO.@..2VB.,
002A00  9D 87 1B 56 45 CF 10 56-25 C7 0B 9D 87 04 56 4A  ...VE..V%.....VJ
002A10  CE F0 56 1D CE E6 56 3E-86 D3 56 3A C6 CF 9F C6  ..V...V>..V:....
002A20  CB 9F 86 B4 56 35 86 AD-56 54 CE 93 56 55 CE 87  ....V5..VT..VU..
002A30  56 34 CE 7D 56 32 CE 71-56 3E CE 64 56 2E CE 59  V4.}V2.qV>.dV..Y
002A40  56 3E 86 51 56 2C 86 4A-56 44 CE 31 56 41 CE 25  V>.QV,.JVD.1VA.%
002A50  56 3E CE 19 56 2B CD EF-56 53 CD E5 56 27 CD D2  V>..V+..VS..V'..
002A60  56 56 CD BD 56 58 CD B0-56 53 CD A6 56 41 CD 9A  VV..VX..VS..VA..
002A70  56 3E 85 90 56 45 CD 85-56 25 C5 80 9D 85 79 56  V>..VE..V%....yV
002A80  4A 85 1A 56 4A 85 08 56-54 C4 A5 56 05 C4 A2 56  J..VJ..VT..V...V
002A90  05 C4 A0 9C C4 9D 56 05-C4 98 56 05 C4 92 56 05  ......V...V...V.
002AA0  C4 8F 56 05 C4 8D 9C C4-8A 56 05 C4 85 56 05 C4  ..V......V...V..
002AB0  83 9C C4 80 56 05 C4 7B-56 05 C4 77 56 05 CC 6C  ....V..{V..wV..l
002AC0  56 51 C4 68 56 05 C4 66-9C C4 63 56 05 C4 61 9F  VQ.hV..f..cV..a.
002AD0  C4 5E 56 05 C4 5C 9F C4-59 56 05 C4 54 56 05 C4  .^V..\..YV..TV..
002AE0  4E 56 05 C4 4B 56 05 C4-49 9C C4 46 56 05 C4 41  NV..KV..I..FV..A
002AF0  56 05 C4 3B 56 05 C4 38-56 05 C4 36 9C C4 33 56  V..;V..8V..6..3V
002B00  05 C4 2E 56 05 CC 24 56-51 C4 21 9C C4 1E 56 05  ...V..$VQ.!...V.
002B10  C4 1C 9F C4 19 56 05 C4-13 56 05 C4 10 56 05 C4  .....V...V...V..
```



(a) (b)

FIG. 1

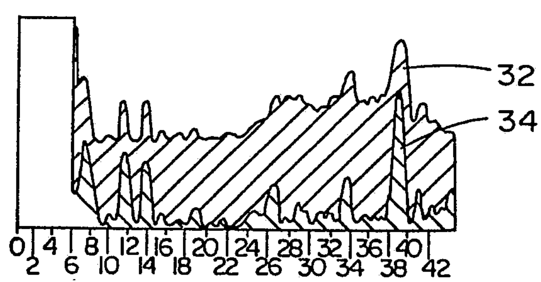


FIG. 2

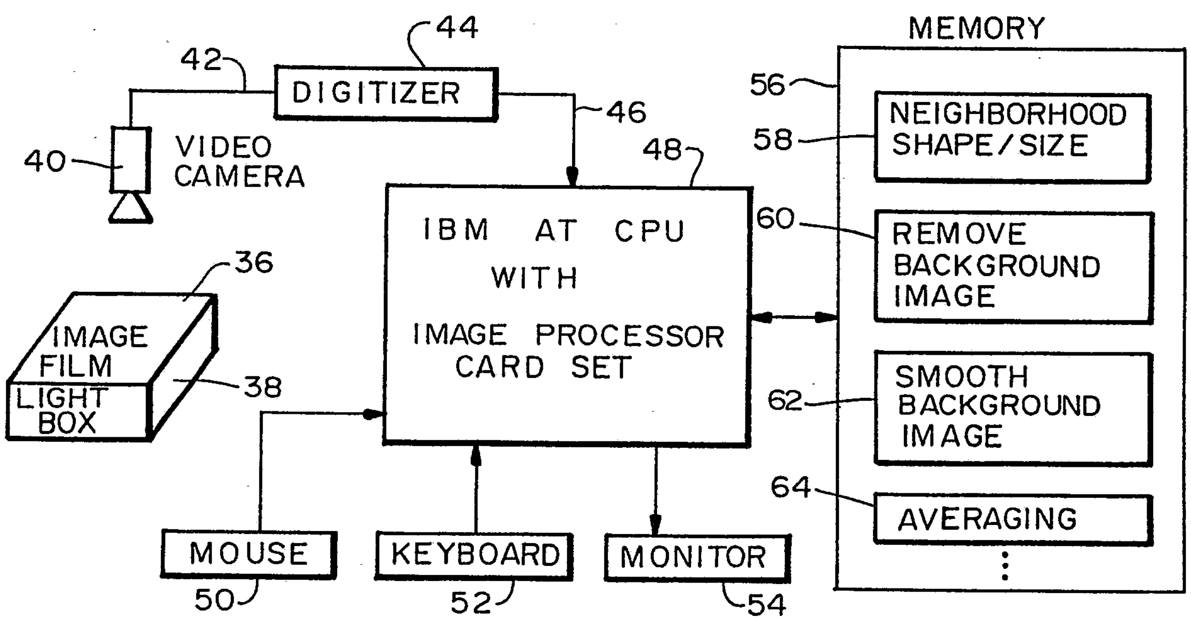


FIG. 3

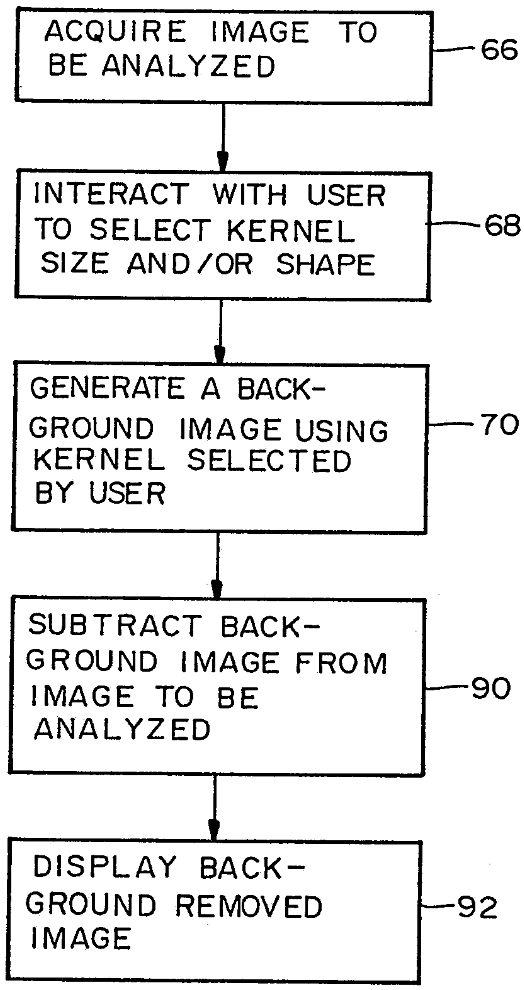


FIG. 4

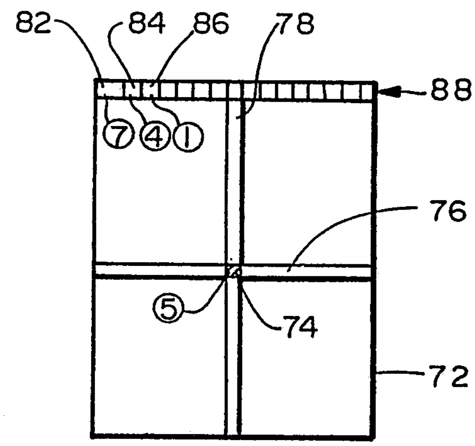


FIG. 5

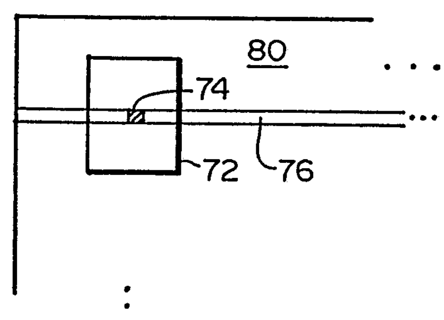


FIG. 6

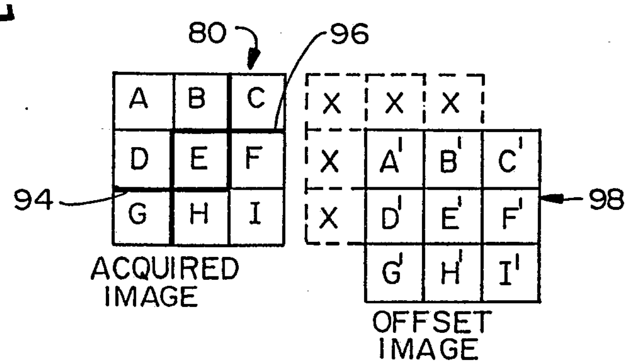


FIG. 7

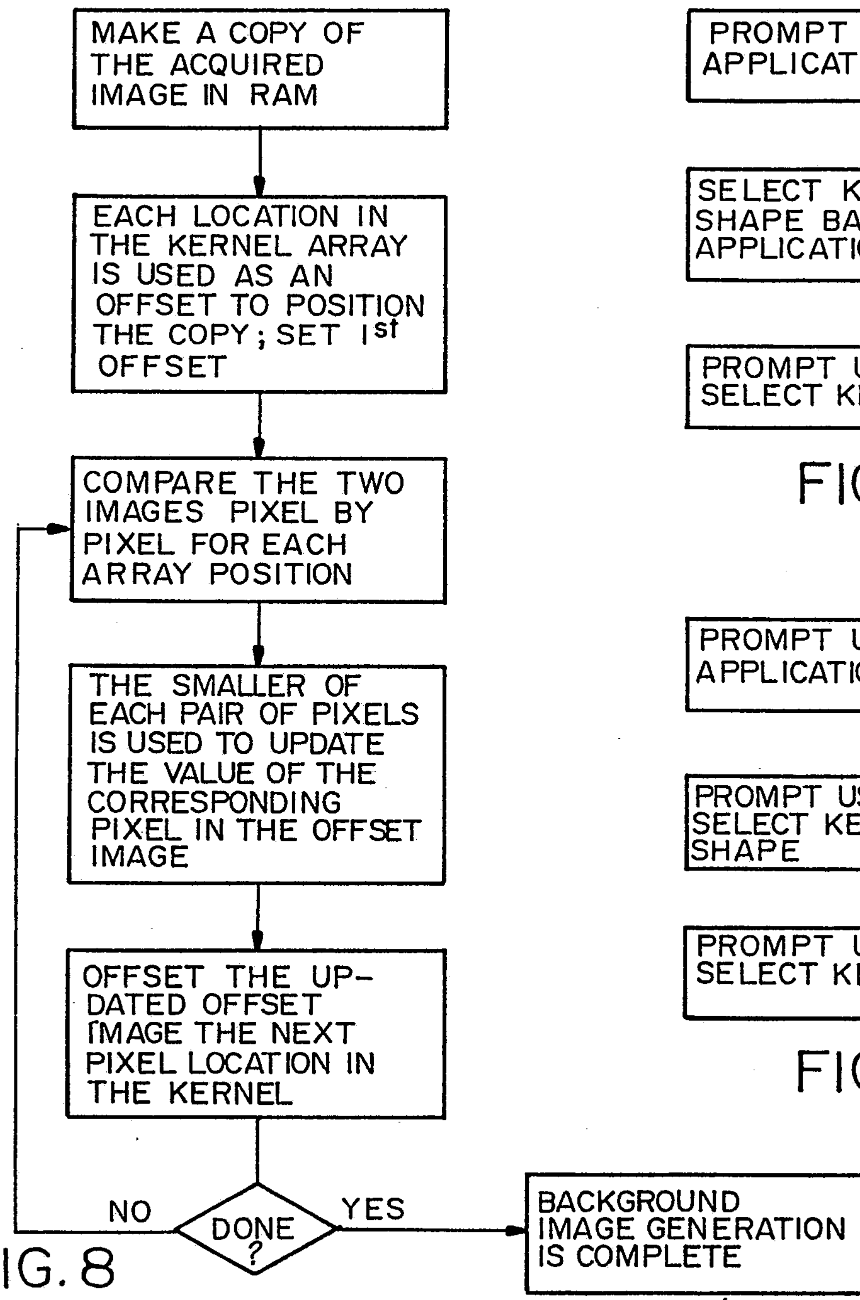


FIG. 8

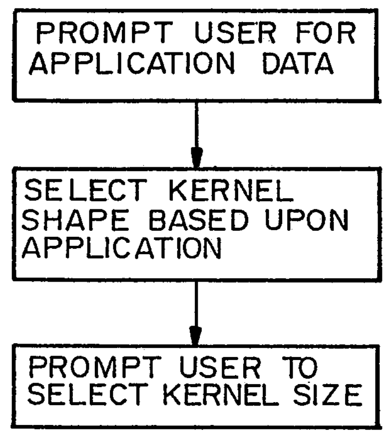


FIG. 9

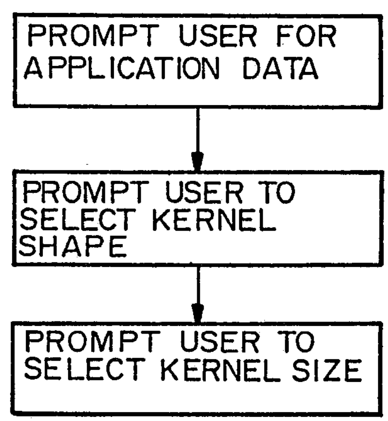


FIG. 10

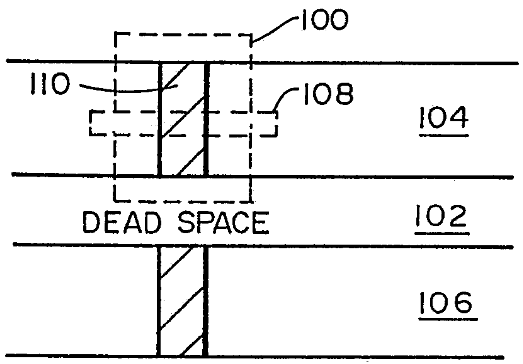


FIG. 11

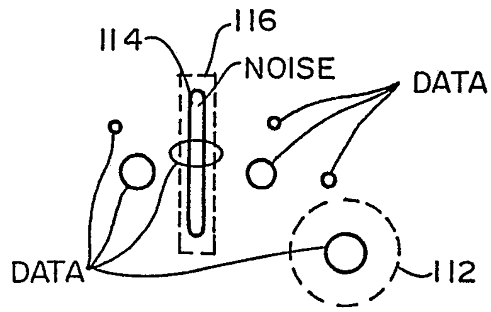


FIG. 12

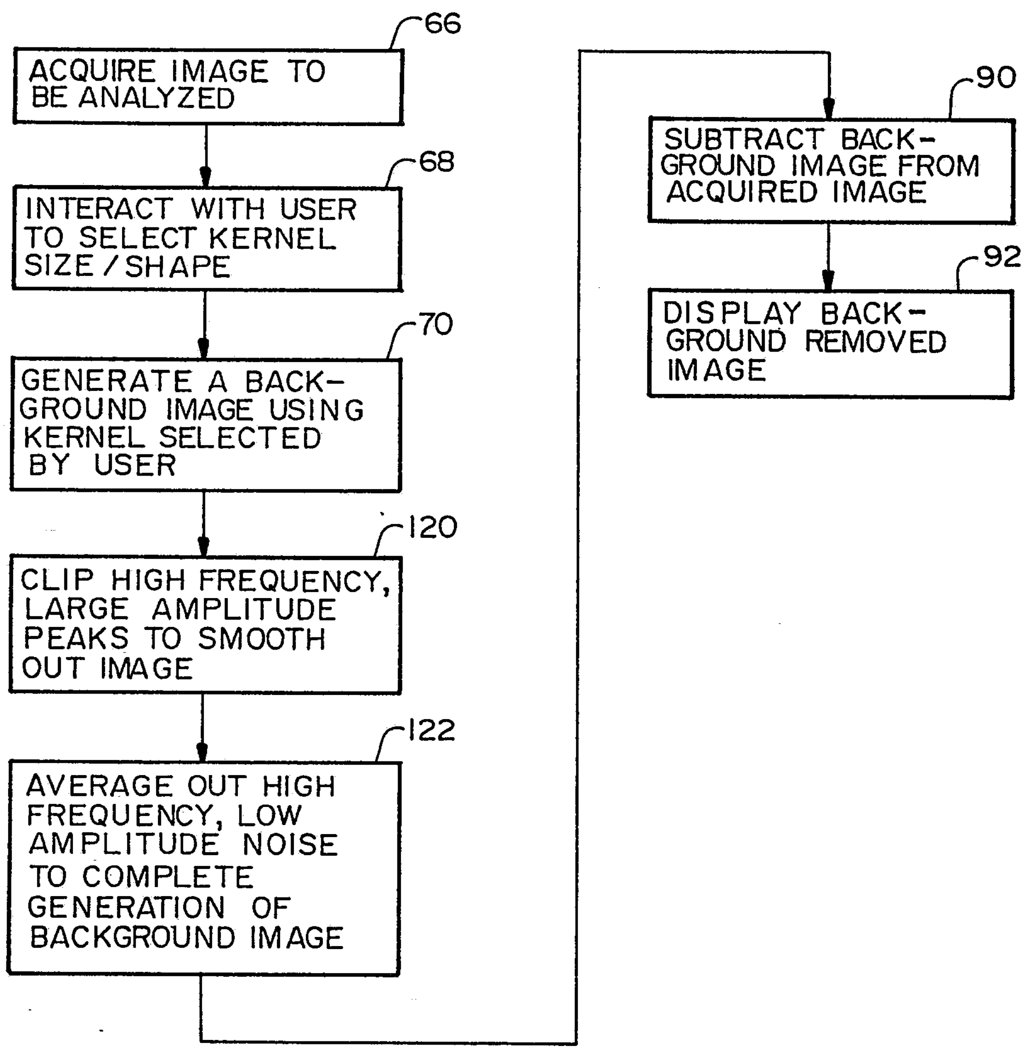
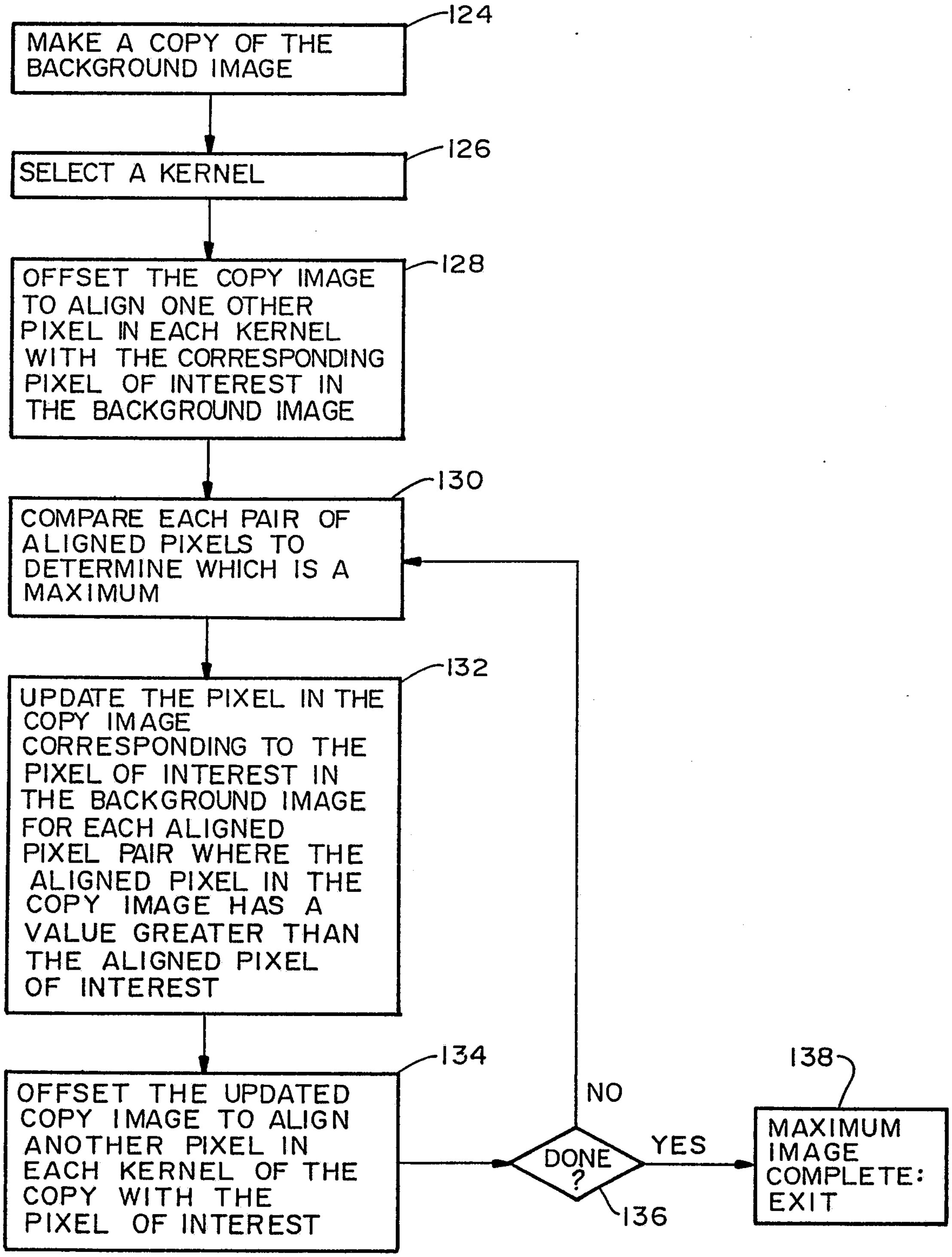
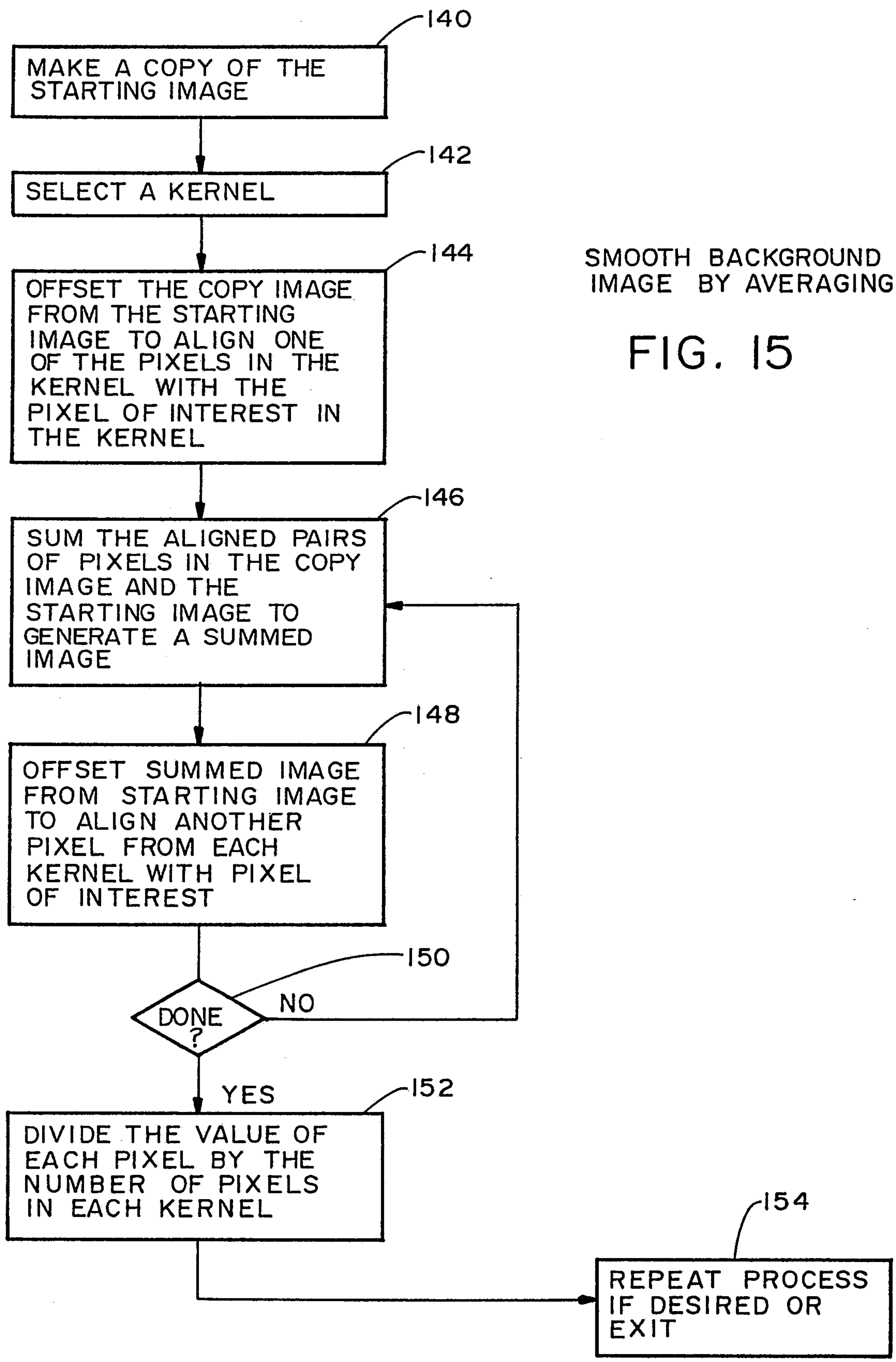


FIG. 13



GENERATE MAXIMUM IMAGE FROM BACKGROUND IMAGE

FIG. 14



SMOOTH BACKGROUND IMAGE BY AVERAGING

FIG. 15

PROCESS FOR GENERATING A PERCENT CHANGE IMAGE

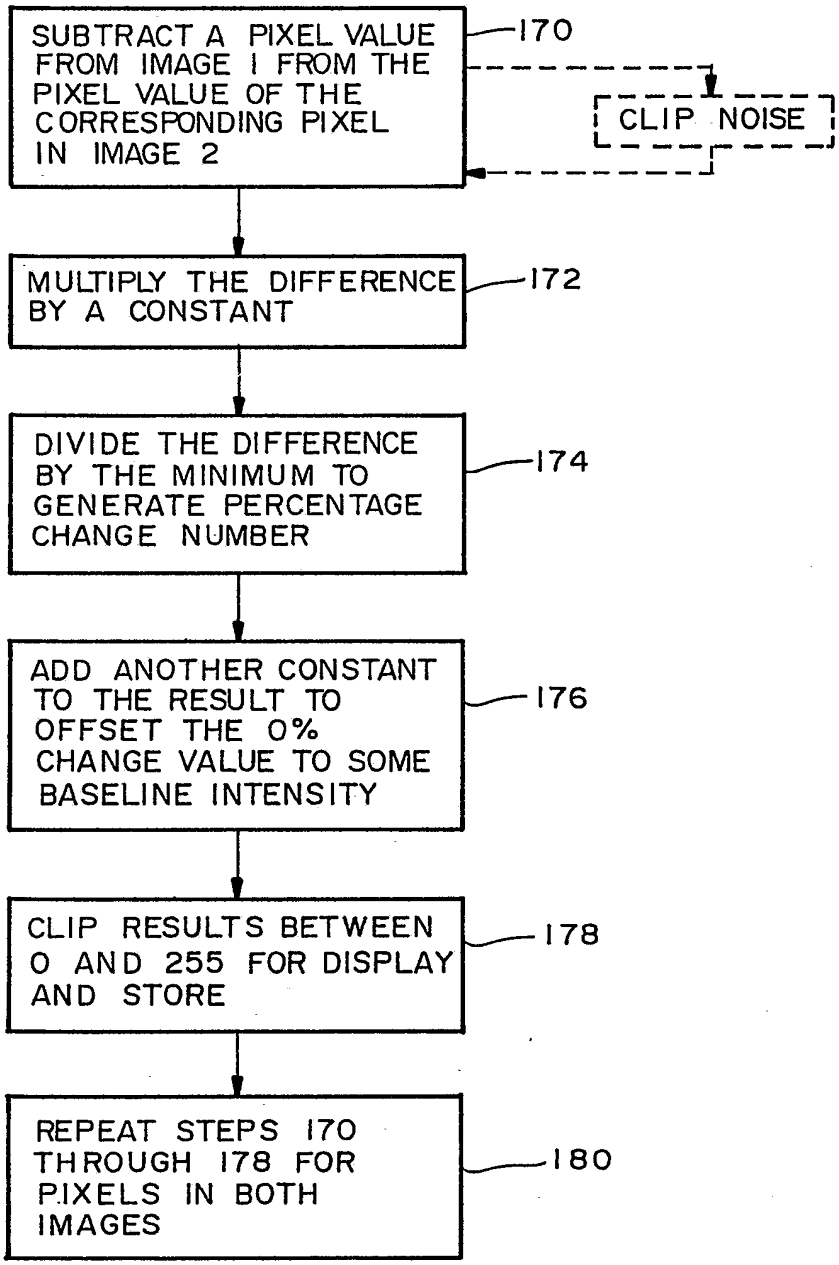


FIG. 16

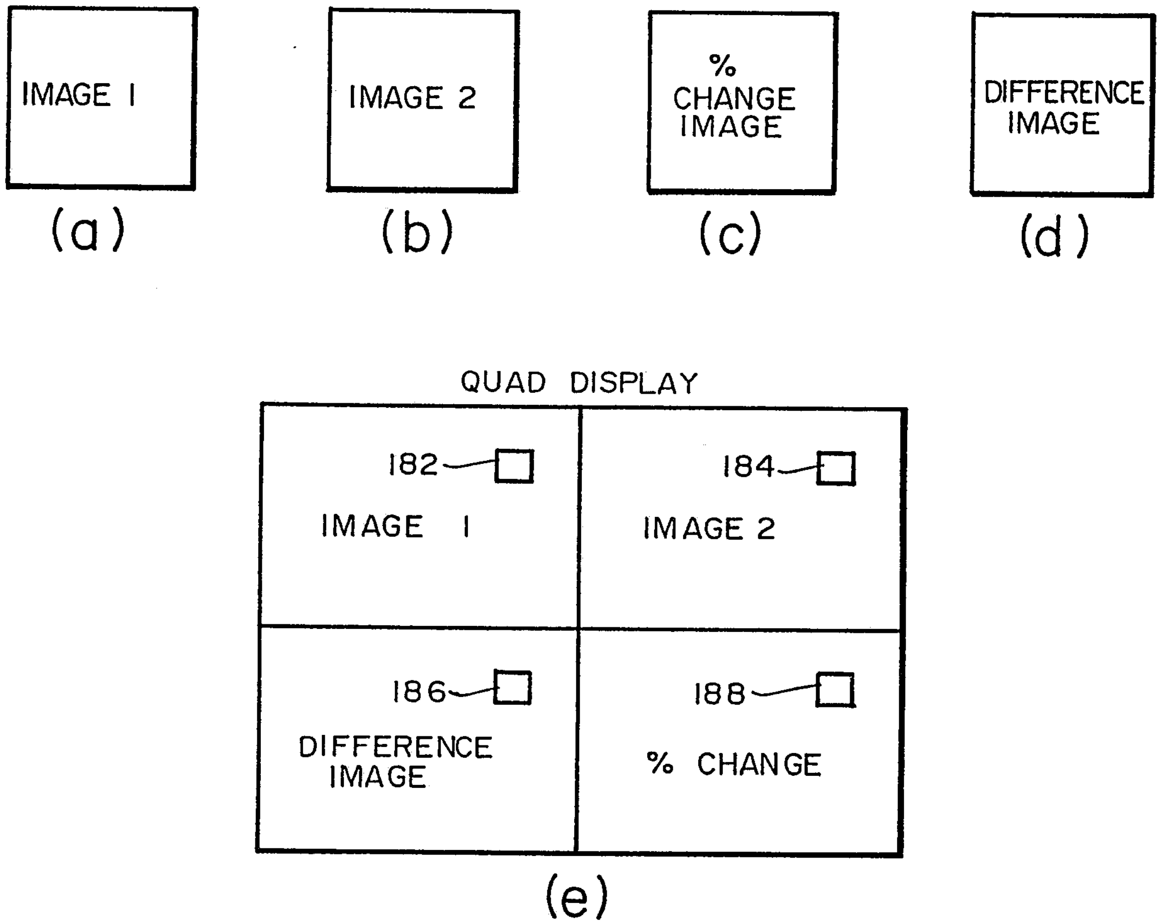


IMAGE 1
(a)
IMAGE 2
(b)
% CHANGE IMAGE
(c)
DIFFERENCE IMAGE
(d)
QUAD DISPLAY
182
IMAGE 1
184
IMAGE 2
186
DIFFERENCE IMAGE
188
% CHANGE
(e)

FIG. 17

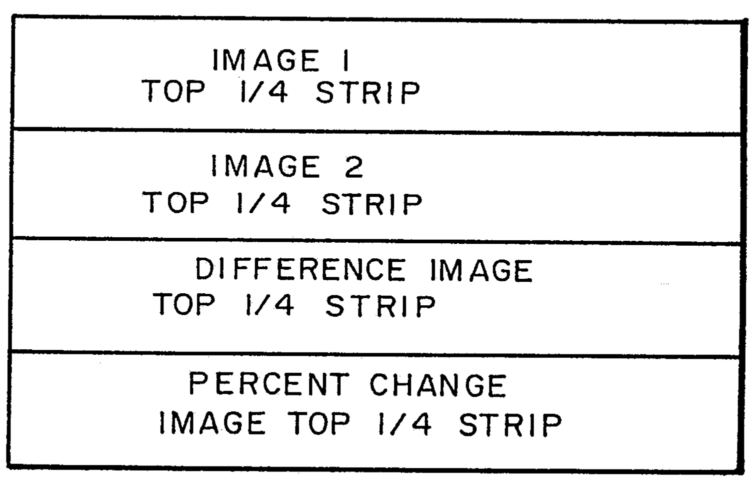


IMAGE 1 TOP 1/4 STRIP
IMAGE 2 TOP 1/4 STRIP
DIFFERENCE IMAGE TOP 1/4 STRIP
PERCENT CHANGE IMAGE TOP 1/4 STRIP

FIG. 18

Neu eingereicht / Newly filed
Nouvellement déposé

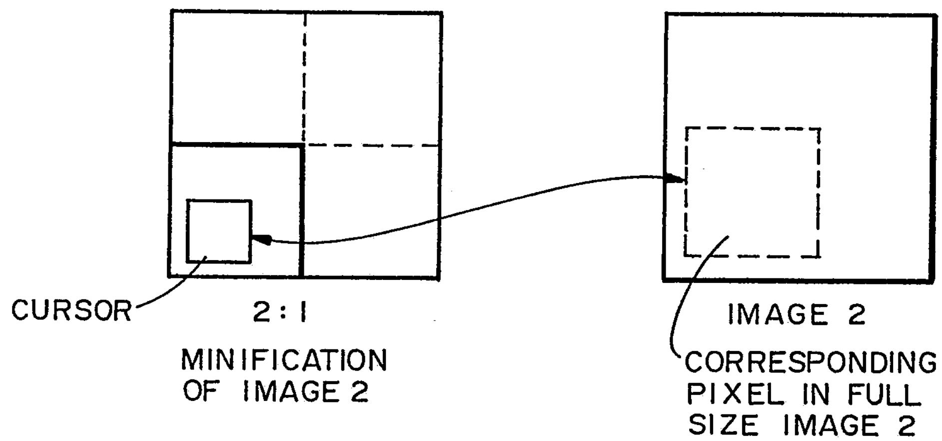


FIG. 19

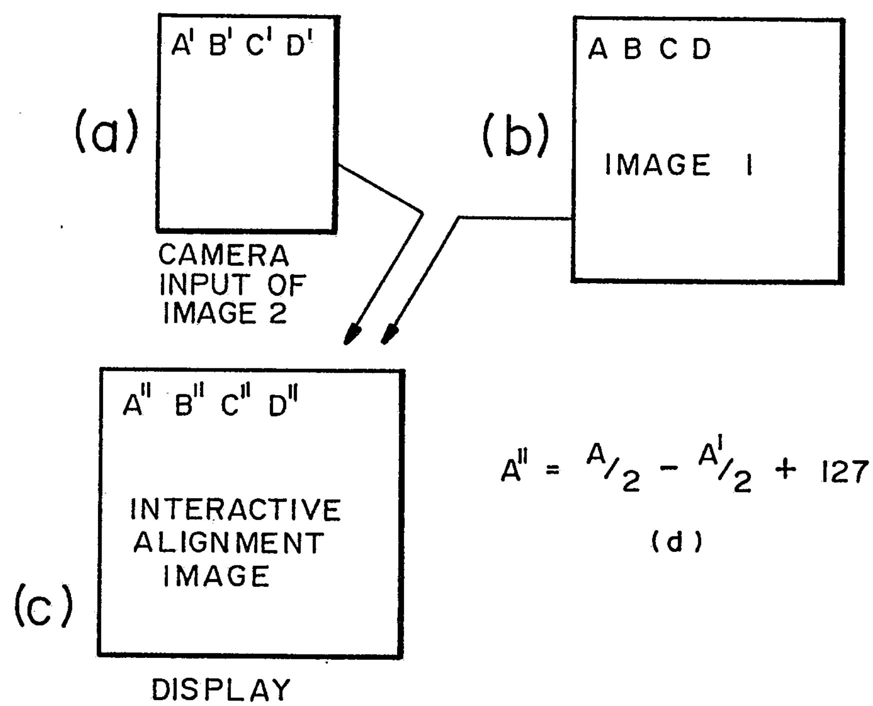


FIG. 20

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ABSTRACT:

An apparatus and method for removing background noise and high frequency noise form an image by comparing each pixel in the image with

neighboring pixels defining a variably shaped and sized kernel. The size and shape of the kernel are optimized for the particular characteristics of the data to be analyzed.